MAN
A
MACHINE.

WHEREIN

The ſeveral SYSTEMS of PHILOSOPHERS, in reſpect to the SOUL of MAN, are examin'd;

The different States of the Soul are ſhewn to be co-relative to thoſe of the BODY;

The Diverſity between MEN and other Animals, is proved to ariſe from the different Quantity and Quality of Brains;

The LAW of NATURE is explained, as relative to the whole Animal Creation;

The Immateriality of an Inward Principle is by Experiments and Obſervations exploded,

AND

A full Detail is given of the ſeveral SPRINGS which move the HUMAN MACHINE.

Tranſlated from the FRENCH of

Monſ. *DE LA METTRIE*,
A celebrated Phyſician of the Faculty at *Paris*, and Author of *Penelope*, or the *Machiavel* in Phyſic.

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PREFACE.

NO ſooner had the following work made its apearance abroad, than it met with the ſevereſt and bittereſt treatment from almoſt every quarter; ſome repreſenting it as a ſyſtem of atheiſm, others as a work, that had a tendency to ſubvert all order, encourage every vice, and in a word, deſtroy the eſſence of virtue itſelf. This notion was propagated ſo induſtriouſly by a particular ſet of men, who ſeem to have an intereſt in oppoſing whatever encourages us to ſhake off the manacles with which cuſtom, prejudice, and education, have fettered human reaſon, that, by the orders of a certain foreign court, it would have been ſentenc'd to the flames, had it not been whiſper'd into the ears of the leading men, that it had for its author no leſs a perſon than the marquiſs D'Argens, the known favourite of the court, the darling of the ladies, the terror of bigots, and the delight of men of ſenſe. This ſudden revolution

volution in the fate of the work, rous'd the attention of all parties, ſo that MAN A MACHINE *is now as well known in foreign parts as any book in* Europe.

We intended to have given the reader a brief account of the author's deſign, to have pointed out a few inſtances of the ſurpriſing force of his reaſoning, and in a word, to have ſhewn, that whatever conſtructions may be put upon his words, yet his intention is, to render man, inquiſitive after truth, fearful of error, and ſuſpicious of every thing that will not bear the teſt of reaſon and experience.

But if we ſhould now undertake ſuch a taſk, it would only anticipate the pleaſure of the reader by a dull, and perhaps imperfect repreſentation of thoſe ſublime parts of philoſophy, which inſtead of being better treated of elſewhere, were never ſo much as known, 'till the publication of MAN A MACHINE, *to which the reader is referr'd, with this wiſh, that he may reap as much pleaſure in reading, as we have had in tranſlating it.*

MAN

MAN *a Machine.*

'TIS not ſufficient for a philoſopher to ſtudy nature and truth; he ought to have courage to ſpeak it in favour of the few, that are willing and able to think; for as to the reſt, who are voluntary ſlaves to prejudices, they are no more capable to come at the truth, than frogs to fly.

The ſyſtems of philoſophers in reſpect to the ſoul of man, are reducible to two. The firſt and moſt ancient is the ſyſtem of materialiſm; the ſecond that of ſpiritualiſm.

Thoſe metaphyſicians who have attempted to prove that matter has a power of thinking, have not diſhonoured their reaſon, becauſe they have an advantage (for ſuch indeed it is here) in expreſſing themſelves with impropriety. In fact, to aſk whether matter is capable of thinking, without conſidering it otherwiſe than in itſelf, is aſking whether

matter is capable of pointing out the hours. Here 'tis obvious, we ſhall avoid the rock on which Mr. *Locke* unfortunately ſplit.

The Leibnitzians with their *monades*, have raiſed an unintelligible hypotheſis. They have rather ſpiritualized matter, than materialized the ſoul. How is it poſſible to define a being, whoſe nature is abſolutely unknown to us?

Deſcartes and all his followers, among whom the *Mallebranchiſts* are alſo reckoned, have committed the ſame miſtake. They admit two diſtinct ſubſtances in man, as if they had really ſeen and told them.

The wiſeſt however have affirmed, that the ſoul cannot know itſelf, but by the light of faith: and yet as rational beings, they thought they might reſerve to themſelves, the right of examining what the ſcripture means by the word *ſpirit*, which it makes uſe of, in ſpeaking of the human ſoul; and if in this reſearch they do not agree with the divines, what wonder is it, when theſe very divines agree ſo little in other points among themſelves?

We ſhall give here in few words, the reſult of all their reflections.

If there be a God, he is the author of nature, as well as of revelation; he has given us the one to explain the other; and reaſon to reconcile them both.

To diſtruſt the knowledge we may draw from animated bodies, is conſidering nature and religion, as two contraries that deſtroy one another; and conſequently 'tis advancing this

this abſurdity, that God contradicts himſelf in his different works, and deceives us.

If there be therefore any ſuch thing as revelation, it cannot contradict nature. By nature alone, we may diſcover the meaning of the words of the goſpel, of which experience is the true interpreter. In fact the other commentators have hitherto only embroiled the truth. Of this we ſhall form a judgment by the author of the *Spectacle de la nature*. "'Tis very ſtrange (ſays he with regard to Mr. *Locke*) that a man, who degrades our ſoul even ſo far, as to think it formed of clay, ſhould preſume to ſet up reaſon for a judge, and ſupreme arbitreſs of the myſteries of faith; for, continues he, what a ſhocking idea ſhould we have of chriſtianity, were we to follow only our reaſon?"

Theſe reflections, beſides their clearing up nothing in relation to faith, contain ſuch frivolous objections againſt the method of thoſe who think themſelves capable of interpreting the ſacred ſcriptures, that I am almoſt aſhamed to loſe time in refuting them.

1. The excellency of reaſon does not depend on that great unmeaning word (*immateriality*;) but on its force, extent, or acuteneſs. Wherefore *a ſoul of clay*, capable of diſcerning at one glance, the relations and conſequences of an infinite number of ideas, that are difficult to apprehend, would be evidently preferable to a heavy and ſtupid ſoul, formed of the moſt precious elements.

'Tis not behaving like a philoſopher, to bluſh with Pliny at the miſery of our origin: that which bears ſo mean an appearance, is here a moſt precious thing, for which nature ſeems to have exerted her utmoſt care and application. But as man, tho' he were to ſpring from a ſtill meaner ſource in appearance, would be nevertheleſs the moſt perfect of beings; ſo let the origin of his ſoul be what it will, if it be pure, noble, and ſublime, it ſhines with rays of beauty that render every one that is endowed with it, worthy of reſpect.

The ſecond method of reaſoning, introduced by *Abbe Pluche* appears to me faulty even in his ſyſtem, which has a mixture of fanaticiſm; for if we have an idea of faith, contrary to the cleareſt principles of nature, and to the moſt unconteſtable truths, we muſt ſuppoſe for the honour of God and of his revelation, that ſuch an idea is falſe, and that we do not as yet ſufficiently comprehend the words of the goſpel.

Of two things one muſt be admitted; either all is deluſion, as well in nature, as revelation; or experience only can account for faith. But what greater folly can there be, than this of our author? Methinks, I hear a peripatetic, who ſays to me; "You muſt "not credit the experiments of *Toricelli*; for "if we believe them, we baniſh the horror "of a vacuum, and then what a ſhocking "philoſophy ſhall we have?"

I have demonſtrated the erroneouſneſs of

Abbe

Abbe Pluche's reaſoning*, in order to prove, firſt that if there be a revelation, it is not ſufficiently evinced by the ſole authority of the church, without the examination of reaſon, as all thoſe bigots pretend who fear it's light. Secondly, that I might ſecure from inſult, the method of thoſe who may pleaſe to follow the way I lay open to them, of interpreting ſuch things as are ſupernatural, and incomprehenſible in themſelves, by thoſe helps, and lights we have all received from nature.

Experiments and obſervation alone ought to guide us here. Theſe we find in abundance, in the writings of ſuch phyſicians as were philoſophers, and not in thoſe philoſophers, who were unacquainted with phyſic. The former have explored and unravelled the labyrinth of Man. They alone have diſcovered to us thoſe hidden ſprings concealed under a cover, which hides from us ſo many wonders. They alone in a philoſophical contemplation of the ſoul, have a thouſand times ſurprized it in it's miſery and grandeur; without deſpiſing it in one of theſe conditions, or idolizing it in the other. Once more, I will be bold to ſay, theſe are the only authors that have a right to ſpeak on this ſubject. What would other lame philoſophers ſay, and above all, the divines? Is it not ridiculous to hear them determine without modeſty, on a ſubject they have never been qualified to examine thoroughly? a ſubject, from which they have been always diverted by dark idle ſtu-

* He falls evidently into a *petitio principii*.

dies,

dies, that have tinctured them with a thouſand, groſs, childiſh prejudices, and to ſay all in one word, have plunged them over head and ears in fanaticiſm, which adds ſtill to their ignorance in the mechaniſm of bodies.

But tho' we have choſen the beſt guides, yet we ſhall find many thorns, and obſtacles in our way.

Man is a machine ſo compound, that it is impoſſible to form at firſt a clear idea thereof, and conſequently to define it. This is the reaſon, that all the enquiries the philoſophers have made *a priori*, that is, by endeavouring to raiſe themſelves on the wings of the underſtanding, have proved ineffectual. Thus it is only *a poſteriori*, or as it were by diſentangling the ſoul from the organs of the body, that we can, I do not ſay, diſcover with evidence the nature of man, but obtain the greateſt degree of probability the ſubject will admit of.

Let us then follow the direction of experience, and not trouble our heads with the vain hiſtory of the opinions of philoſophers. To be blind, and to think we can do without this guide, is the very height of infatuation. Very juſtly has it been obſerved by a modern writer, that nothing but vanity can hinder us from drawing from ſecond cauſes, what we pretend to infer from the firſt. We may, and even ought to admire all theſe ſubtil geniuſes in their moſt uſeleſs labours; I mean the *Deſcarteſes*, the *Mallebranches*, the *Leibnitzes*, &c. but I would fain know, what

what benefit mankind have reaped from their profound meditations, and from all their works? Let us then ſee, not what others have thought, but what we ought to think ourſelves for the tranquility of our own lives.

As many different conſtitutions as there are amongſt men, ſo many different minds, characters, and manners. Even *Galen* knew this truth, which *Deſcartes*, and not *Hypocrates*, as the author of the hiſtory of the ſoul ſays, has carried ſo far, as to ſay, that phyſic alone could change the minds and manners together with the body. It is true, that melancholy, bile, phlegm, blood, &c. according to the nature, quantity, and different mixture of theſe humours, not only produce differences in different men, but alſo render every individual different from what he was, before particular changes were induced in his fluids.

In diſeaſes the ſoul is ſometimes as it were eclipſed, and ſhews no ſign of exiſtence; ſometimes one would ſay it was doubled, ſo far does paſſion tranſport it; ſometimes its weakneſs vaniſhes, and a fool by the recovery of health, becomes a man of ſenſe. Sometimes the nobleſt genius in the world ſinks into ſtupidity, and never after recovers. Farewell, then to all thoſe noble acquiſitions of learning obtained with ſo much labour!

Here you may ſee a paralytic, who aſks whether his leg be in bed; there a ſoldier who believes he ſtill has the arm the ſurgeon has

has cut off. The memory of his former ſenſations, and of the part to which his ſoul referred them, cauſes his deluſion and ſpecies of phrenzy. It ſuffices to ſpeak to him of the amputated member, to make him recollect and renew, as it were, all its former ſenſations; which is done with a kind of diſpleaſure of the imagination impoſſible to be expreſſed.

One man ſhall cry like a child at the approaches of death, which another perhaps will laugh at. What was it that could change the intrepidity of *Canus Julius*, *Seneca*, and *Petronius* into puſillanimity and cowardice? An obſtruction in the ſpleen, the liver, or ſome diſorder in the *vena porta*. Why? Becauſe the imagination is diſorder'd at the ſame time, as the entrails, and hence ariſe all the different ſurprizing phænomena of the hyſteric, and hypochondriac affections.

What ſhall I ſay of thoſe who believe they are transformed into wolves, cocks, pipkins, or believe that the dead ſuck, and live upon their blood? Or why ſhould I take notice of thoſe who think they ſee their noſes, or ſome other member chang'd into glaſs, and who muſt be adviſed to lye on ſtraw for fear of breaking them; to the end that they may find again the uſe of thoſe parts, and their true fleſh, when upon ſetting fire to the ſtraw, they are afraid of being conſumed, a fear which has ſometimes cured a palſy?

a palſy? I ought to paſs lightly over things that are well known by every body.

Nor ſhall I dwell upon the effects of ſleep. Behold that wearied ſoldier! he ſnores in a trench, within the noiſe of a hundred cannon. His ſoul perceives nothing, his ſleep is a perfect apoplexy. A bomb is ready to daſh him in pieces; perhaps he will leſs feel this blow, than an inſect that lies under his body.

On another ſide, a man, whom jealouſy, hatred, avarice, or ambition devour, is incapable of finding the leaſt repoſe. The ſtilleſt place, the moſt cooling and refreſhing liquors, all become a ſubject of uneaſineſs to him, who has not freed his heart from the turbulency of the paſſions.

The body and ſoul ſeem to fall aſleep together. In proportion as the motion of the blood grows calm, a ſoft ſoothing ſenſe of peace and tranquility ſpreads itſelf over the whole machine; the ſoul finds itſelf ſweetly weighed down with ſlumber, and ſinks with the fibres of the brain: it becomes thus paralitic as it were, by degrees, together with all the muſcles of the body. The latter are no longer able to ſupport the head; the head itſelf can no longer bear the weight of thought; the ſoul is during ſleep, as if it had no exiſtence.

If the circulation goes on with too great rapidity; the ſoul cannot ſleep. If the ſoul be thrown into too great an agitation, the blood loſes its calm, and ruſhes thro' the veins with a noiſe that ſometimes may be diſtinctly

heard: ſuch are the two reciprocal cauſes of inſomny. A frightful dream makes the heart beat double, and tears us from the ſweet neceſſity of reſt, as effectually as a lively pain, or preſſing want. In a word, as the ſole ceſſation of the functions of the ſoul produces ſleep, man is ſubject even during ſome waking moments (when in reality the ſoul is no more than half awake) to certain ſorts of revery or ſlumbers of the ſoul, which are very frequent, and ſufficiently prove that the ſoul does not wait for the body to fall aſleep. For if it does not entirely ſleep, how little does it want of it? Since it is impoſſible for her to recollect one object, to which ſhe gave attention, amidſt that innumerable crowd of confuſed ideas, which as ſo many vaniſhing clouds had filled up, if I may ſo ſay, the atmoſphere of the brain.

Opium has too great a relation with ſleep, not to give it a place here. This drug intoxicates as well as wine, coffee, *&c.* every one according to it's nature, and the quantity of the doſe. It renders man happy in a ſtate, which one would think to be the grave of all thoughts, as it is the image of death. What a pleaſing lethargy! the ſoul would never be willing to quit it: ſhe was torn as it were to pieces with the ſharpeſt pains; but ſhe has now no other ſenſation, than of the pleaſure of ſuffering no longer, and of enjoying a charming tranquillity. Opium ſeems even to change the will; it forces the ſoul that would fain wake and divert herſelf, to lie down with the body againſt

againſt her inclination. I wave mentioning here the hiſtory of poiſons.

'Tis by laſhing, as it were, the imagination, that coffee, that antidote of wine, diſſipates our head-achs, and chagrins, without making us ſuffer, as the other liquor often does, the next day.

Let us conſider the ſoul in its other wants. The human body is a machine that winds up its own ſprings: it is a living image of the perpetual motion. Food nouriſhes what a fever heats and excites. Without proper food the ſoul languiſhes, raves, and dies with faintneſs. It is like a taper, which revives in the moment it is going to be extinguiſhed. Give but good nouriſhment to the body, pour into its tubes vigorous juices and ſtrong liquors; then the ſoul, generous as theſe, arms itſelf with courage; and a ſoldier, whom water would have made run away, becoming undaunted, meets death with alacrity amidſt the rattle of drums. Thus it is that hot water agitates the blood, which cold had calmed.

What a vaſt power there is in a repaſt! Joy revives in a diſconſolate heart; it is transfuſed into the ſouls of all the gueſts, who expreſs it by amiable converſation, or muſic. The hypochondriac mortal is overpowered with it; and the lumpiſh pedant is unfit for the entertainment.

Raw meat gives a fierceneſs to animals; and man would alſo become fierce by the ſame nouriſhment. This is ſo true, that the *Eng-*

liſh, who eat not their meat ſo well roaſted or boiled as we, but red and bloody, ſeem to partake of this fierceneſs more or leſs, which ariſes in part from ſuch food, and from other cauſes, which nothing but education can render ineffectual. This fierceneſs produces in the ſoul pride, hatred, contempt of other nations, indocility, and other bad qualities that deprave man's character, juſt as groſs phlegmatic meat cauſes a heavy, cloudy ſpirit, whoſe favourite attributes are idleneſs and indolence.

Mr. *Pope* knew perfectly well the power of gluttony, when he ſaid

Catius *is ever moral, ever grave,*
Thinks who endures a knave, is next a knave:
Save juſt at dinner—then prefers no doubt,
A rogue with ven'ſon, to a ſaint without.

And a little higher the ſame poet ſays,

See the ſame man, in vigour, in the gout,
Alone in company, in place or out;
Early at buſineſs, and at hazard late,
Mad at a fox-chaſe, wiſe at a debate:
Drunk at a borough, civil at a ball,
Friendly at Hackney, *faithleſs at* Whitehall.

There was, in *Switzerland*, a magiſtrate called Monſieur *Steiguer*, of *Wittighofen*: this gentleman was, when faſting, the moſt upright and merciful judge; but woe to the wretch who came before him when he had made a hearty

hearty dinner! he was then diſpoſed to hang every body, the innocent as well as the guilty.

We think not, nay, we are not honeſt men, but as we are chearful, or brave; all depends on the manner of winding up our machine. A perſon would be tempted to think, at certain times, that the ſoul is lodged in the ſtomach, and that Van Helmont in placing it in the pylorus, * is not deceived but by taking a part for the whole.

To what rage and extravagance cannot hunger drive us? No longer is there any reſpect ſhewn to the bowels, to which we owe, or to which we have given life. They are torn and devoured in a deteſtable feaſt; and in the madneſs that ſeizeth us, the weakeſt are always ſure to fall a prey to the ſtrongeſt.

Pregnancy that mimic of the green-ſickneſs, is not contented oftentimes with the depraved longings of the latter diſorder; it has ſometimes driven a frantic ſoul into the greateſt extravagances; the effects of a ſudden madneſs, which ſtifles the very ſentiments of nature. 'Tis thus the brain, that matrix, if I may uſe the expreſſion, of the ſoul, is perverted after its manner, together with that of the body.

Strange is that other kind of madneſs which is ſometimes obſervable among theſe men and women, who are forc'd to continency and bleſs'd with good health. 'Tis not enough for that baſhful modeſt maid to have loſt all honour and ſhame; ſhe makes no more of inceſt, than a wanton wife does of adultery. If her neceſſi-

* The nether orifice of the ſtomach.

ties

ties do not find a quick remedy, they will not be confin'd to ſymptoms of an uterine affection, of madneſs, *&c.* the wretch will die of a diſeaſe, for the cure of which the world is ſtocked with phyſicians.

We need only have eyes to ſee the neceſſary influence which age has over reaſon. The ſoul follows the progreſs of the body, as well as of education. In the fair ſex, the ſoul adapts itſelf to the delicacy of conſtitution: thence flow that tenderneſs, that affection, thoſe lively ſentiments founded rather upon paſſion than reaſon; and in fine, thoſe prejudices and ſuperſtitions whoſe impreſſion is ſo hard to be effaced. Man, on the contrary, whoſe brain and nerves participate of the firmneſs of all the ſolids, has his mind, as well as the features of his face, more nervous. Education, which women are deprived of by cuſtom, adds ſtill new degrees of ſtrength to his ſoul. With ſuch ſuccours, both of nature and art, how ſhould he not be more grateful, more generous, more conſtant in friendſhip, more firm in adverſity, *&c.* But according to the opinion of the author of the letters on phyſiognomy, the ſex, which is favoured with the graces of mind and body, together with almoſt all the tendereſt and moſt delicate ſentiments of the heart, ought not to envy man this double ſtrength of body and mind, which ſeem to have been beſtowed upon him for no other end but in order to render him more ſenſible of the attractives of beauty, and more ſubſervient

ſubſervient to the pleaſures of that amiable part of the creation.

It is not more neceſſary to be as great a phyſiognomiſt as that author, to gueſs at the diſpoſition of the mind, by the lines and features of the face, when they are marked in a certain degree; than it is requiſite to be a great phyſician, in order to know a diſtemper, accompanied with all its outward ſymptoms. Examine the portraits of *Locke*, *Steel*, *Boerhaave*, *Maupertuis*, &c. you will not be ſurpriſed to find their features ſtrong, and their eyes aquiline. Examine an infinity of others, you will always diſtinguiſh the beauty of a great genius; and oftentimes you will know an honeſt man from a knave. It has been obſerved, that a celebrated poet of our days, has (in his portrait) the air of a rogue, joined with *Prometheus*'s fire.

Hiſtory furniſhes us with a memorable example of the power of air. The famous duke of *Guiſe* was ſo ſtrongly convinced, that *Henry* the IIId, who had had him ſo often in his power, would never dare to aſſaſſinate him, that he ſet out for *Blois*, where the King then reſided. The chancellor *Chyverni* being informed of his journey, cried out, *He is a loſt Man*. When this fatal prediction was verified by the event, they aſked him the reaſon. "It is twenty years, ſaid he, ſince I have "been acquainted with the king: he is na- "turally compaſſionate, and even weak; but "I have obſerved, that a meer trifle makes

"him

" him impatient, and drives him to frenzy " in very cold weather."

One nation, we may obſerve, is generally heavy and ſtupid; and another is ſprightly, gay, and ſagacious. What is this owing to, unleſs it be in part to the food they live on, to the ſeed of their parents *, or to that chaos of different elements that ſwim in the immenſe expanſe of the air? The mind has, as well as the body, its epidemical and ſcorbutic diſorders.

Such is the power of climate, that a man who changes it, feels, in ſpite of him, the effects of this alteration. Man is like a walking plant, that has tranſplanted itſelf: if the climate be not the ſame, it muſt either degenerate or improve.

We learn inſenſibly, from thoſe we live with, their geſtures, accents, *&c.* juſt as the eye-lid falls at the threatening of a blow, or as the body imitates mechanically and involuntarily all the poſtures and movements of a good pantomime.

What I have now mentioned, ſhews that the beſt company for an ingenious man is his own, if he cannot find his equals. Wit contracts ruſt amongſt thoſe who have none: for want of exerciſe at tennis, the ball is undextrouſly returned to him who knows not how to ſtrike it. I would rather chuſe for a companion a ſenſible man, tho' unimproved

* The hiſtory of animals and of men, demonſtrates the influence of the ſeed of parents, over the minds and bodies of their children.

by

by education, than a perſon who had had the misfortune of a bad one, provided the former had but ſufficient youth on his ſide. And ill-tutored wit is like a ſtrolling actor, whom the country has ſpoiled.

The different ſtates of the ſoul are therefore always co-relative to the ſtates of the body. But the better to ſhew all this dependency and its cauſes, let us make uſe of comparative anatomy, and open the entrails of men and brutes. What method can we have of knowing the human ſtructure, but by being enlightened by a juſt compariſon of the animal oeconomy of both?

In general, the form and compoſition of the brains of quadrupeds are very near the ſame with thoſe of man. There is the ſame figure, the ſame compoſition throughout: with this eſſential difference, that man of all animals has the moſt brains, and fulleſt of windings and folds in proportion to the bulk of his body; next to him are the ape, the beaver, the elephant, the dog, the fox, the Cat, *&c.*

Theſe are the animals, that reſemble man the moſt; for we obſerve likewiſe amongſt them the ſame gradual analogy, in relation to the callous body, in which *Lanciſi* had placed the ſeat of the Soul, before the late Monſieur *de la Peyronnie*, who has illuſtrated this opinion with a variety of experiments.

After quadrupeds, birds have the largeſt portion of brains. Fiſh have big heads indeed, but void of ſenſe; as are the heads of a great part of mankind. They have not the

callous body and have very little brains; but inſects have none at all.

I ſhall not expatiate in a longer detail of all the varieties of nature, nor in conjectures; for both are infinite: as we may judge only by reading the treatiſes of *Willis de cerebro & de anima brutorum.*

I ſhall only conclude what evidently follows from theſe inconteſtable obſervations: firſt that the more ſavage animals are, the leſs brains they have: ſecondly, that this organ ſeems to be greater in ſome meaſure, in proportion to their docility: thirdly, that there is a conſtant and very ſurprizing law of nature, that the more is gained on the ſide of underſtanding and wit, the more is loſt on the ſide of inſtinct. Now which overballances, the loſs or the gain?

But do not imagine, I deſign by this reaſoning to prove that the volume of the brain alone ſuffices us, to judge of the docility of animals; the quality muſt correſpond with the quantity, and the ſolids and fluids be in that harmonious equilibrium, which conſtitutes health.

If a weak perſon wants not a due quantity of brain, as is often obſerved, yet this organ may have a bad conſiſtency; for inſtance too great a ſoftneſs. The ſame may be ſaid of idiots; the defects of their brain are not always concealed from our enquiry; but if the cauſes of imbecillity, folly, *&c.* are not ſenſible, how ſhall we ever inveſtigate the hidden cauſes of the endleſs variety of human minds? Theſe would eſcape the ſubtle

eyes

eyes of a linx, or of Argus. *A nothing, a minute fibre, ſomething too ſubtle for the niceſt anatomy,* would have made two dunces, of *Eraſmus* and *Fontenelle*, as the latter himſelf obſerves in one of his moſt ingenious dialogues.

Beſides the ſoftneſs of the marrow of the brain, in children, puppies, and birds, *Willis* has obſerved, that the *carvernous bodies* are effaced and diſcoloured as it were in all theſe animals; and that their depreſſions are as imperfectly formed as in paralytic perſons. He adds, what is very true, that man has the annular protuberance very large, and then in gradual diminution the ape, and other animals abovementioned; whilſt the calf, the ox, the wolf, the ſheep, the hog, *&c.* which have this part of a very ſmall ſize, have the *nates* and *teſtes* vaſtly large.

Little does it ſignify to affect a reſervedneſs about the conſequences, which may be drawn from theſe obſervations, and many others upon this kind of inconſtancy in the veſſels, and nerves, *&c.* ſuch a variety cannot be a meer wanton ſport of nature. It proves at leaſt the neceſſity of a good and complete organiſation, becauſe in the whole animal oeconomy, the ſoul improving gradually with the body, acquires penetration and ſagacity, in proportion as the latter gains vigour and perfection.

Let us ſtop a little, to contemplate the different docility of animals. Doubtleſs the beſt analogy inclines the mind to believe, that the cauſes we have made mention of, are pro-

ductive of the whole diverſity obſervable betwixt them and us; tho' it muſt be acknowledged that our weak underſtanding, confined to groſs obſervations, cannot deſcry the hidden connections betwixt the cauſe and its effects. This is a kind of *harmony* which philoſophers will never be able to underſtand.

Amongſt animals, ſome learn to talk, and ſing; they remember tunes and airs, and take the notes as perfectly, as the moſt ſkilful muſician. Yet others which ſhew more ſagacity, ſuch as the ape, cannot ſucceed in this. Why ſo, unleſs it be thro' ſome defect in the organs of articulation?

But is this ſo far a defect of the conformation, as to be irremediable? In a word, is it an abſolute impoſſibility to teach this animal to ſpeak? really I think not.

I would take the baboon, preferably to all others, till chance leads us to the diſcovery of ſome other ſpecies more reſembling ours; for there is no contradiction in ſuppoſing there may be ſuch in countries yet unknown to us. This animal is ſo very like us that *Naturaliſts* have called it the ſavage man, or the man of the woods: I would take him on the ſame condition, as the ſcholars of *Ammanus*; that is to ſay, I would have him neither too young, nor too old: for thoſe that are brought over into *Europe* are commonly too old. I would chuſe one, that had the moſt ſenſible face, and that anſwered beſt my expectation in a thouſand pretty little tricks. In fine if I found myſelf unfit for being his tutor, I would put him

to

to the ſchool of that excellent maſter, I now mentioned, or of another, if any ſuch exiſts, as ſkilful as he.

You know by the book of *Ammanus**, and of thoſe who have tranſlated his method, all the wonders that he could effect in thoſe who were born deaf, in whoſe eyes as he ſays himſelf, he made the diſcovery of ears; and in how ſmall a time he taught them to hear, ſpeak, read, and write. I grant that the eyes of a deaf perſon ſee clearer, and have a quicker perception, than if he had his hearing, becauſe the loſs of one Limb, or of one ſenſe, may encreaſe the ſtrength and penetration of another: but the baboon ſees and hears: he thoroughly underſtands what he hears and ſees, and ſo perfectly does he comprehend the ſigns, that are made him, that in any other ſport or exerciſe, I doubt not but he would make fools of *Ammanus*'s diſciples. Why then ſhould the education of baboons and monkeys be impoſſible? Why might they not at length, by dint of care, imitate, after the example of the deaf, the motions neceſſary for articulation? I dare not decide whether the organs of ſpeech in a monkey, are incapable with all poſſible diligence, of attaining pronunciation: but an abſolute impoſſibility of this kind would indeed ſurprize me, becauſe of the great analogy there is betwixt the monkey and man; and beſides there has hitherto been no animal found, whoſe inward and outward parts re-

* The author of the natural hiſtory of the ſoul, *&c.*

ſemble

ſemble him in ſo ſurprizing a manner. Mr. *Locke* who certainly was never ſuſpected of credulity, made no difficulty in believing the hiſtory Sir *William Temple* gives us in his memoirs, of a parrot that anſwered pertinently to every thing it was aſked, and learnt like us to hold a converſation. I am not ignorant that this great metaphyſician † has been made a jeſt of upon this account, but had any one publicly declared to the whole world, that there were generations without eggs and females, would he, think you, have found many partizans? Yet Mr. *Trembly* has diſcovered ſome, without copulation, and by ſection only. Would not *Ammanus* have paſſed for a madman, had he boaſted, before he made the lucky experiments, of inſtructing, and in ſo ſmall a time, ſuch ſcholars as his? Yet his ſucceſs has aſtoniſhed the univerſe, and like the author of the hiſtory of the polypus's, he has launched with full ſail into immortality. He that owes to his own genius the wonders he performs, far excells in my opinion thoſe, who for theirs are indebted to chance. He that has found out the art to embelliſh the fineſt of kingdoms, and to give it perfections which it had not before, ought to be ranked above an idle inventor of frivolous ſyſtems, or a laborious author of barren diſcoveries. Thoſe of *Ammanus* are of a much ſuperior value, he has drawn men out of that inſtinct, which they ſeemed condemned to; he has

† The author of the hiſtory of the ſoul.

given

given them ideas, wit, and in one word, a ſoul, which otherwiſe they would never have had. What power can be imagined greater?

Let us not limit the reſources of nature, they are infinite; eſpecially aſſiſted by an extraordinary art.

Might not the ſame mechaniſm, that opens the pipe of *Euſtachius* in deaf perſons, unſtop it alſo in monkeys? A happy inclination to imitate the pronunciation of the maſter might, one would think, ſet at liberty the organs of ſpeech in animals, that imitate ſo many other ſigns with ſo much addreſs and ſagacity. I not only defy any one to produce me a really concluſive argument, that will prove my project impoſſible and ridiculous: but the ſimilitude of the ſtructure and operations in the monkey are ſuch, that I ſcarce doubt, but that if we carefully tutored this animal, we might teach him to ſpeak, and by conſequence to underſtand, according to his capacity, a language. Then he would no longer be a wild or imperfect man; he would be a compleat man, a little polite fellow, with as many members and muſcles as ourſelves, to think and improve by his education.

The tranſition from animals to man is no way violent: to this all true philoſophers will agree. What was man before the invention of words, and the knowledge of language? nothing but an animal of his kind, with much leſs natural inſtinct than others, of whom in ſuch a ſtate he could not imagine himſelf king; and diſtinguiſhed from the ape and from other animals

mals, only as the ape himſelf is diſtinguiſhed; that is, by a more ſenſible phyſiognomy. Confined in this condition to the *intuitive knowledge* of the followers of *Leibnitz*, he ſaw nothing but figures and colours, without being able to diſtinguiſh any thing amongſt them: old or young he was a child at every age, he ſtammered his ſenſations and wants, as a dog famiſhed or tired with reſt craves to eat, or to run about.

Words, languages, laws, ſciences, and the liberal arts were introduced in time, and by them the rough diamond of our underſtanding was poliſhed. Man has been broke and trained up, like any other animal; and he has learnt to be an author, as well as to be a porter. Geometricians have contrived to make the moſt difficult demonſtrations and calculations, juſt as a monkey to put on, or take off his little hat, or jump upon his tractable dog. All was done by ſigns; each ſpecies comprehended what it could, and thus it was that men acquired *ſymbolical knowledge*, which ſtill retains this name amongſt the *German* philoſophers.

Nothing, we ſee, is ſo ſimple as the mechaniſm of our education! All is reduced to ſounds or words, that from the mouth of one paſs thro' the ears of another, into the brain, which receives at the ſame time by the eyes the figure of bodies, of which theſe words are arbitrary ſigns.

But who is it that firſt contrived to ſpeak? Who was the firſt preceptor of the human race?

Who

Who invented the means of benefiting by the docility of our organization? This I confeſs I know not: the names of thoſe firſt and happy geniuſes, are loſt in the dark night of time. But art is the daughter of nature; and nature therefore muſt have been long before her.

We ought to believe, that the beſt organized men, thoſe for whom nature exhauſted her favours, firſt inſtructed others. They could not hear a new ſound, for example, experience a new ſenſation, or be ſtruck with all this beautiful variety of objects that form the raviſhing ſpectacle of nature, without finding themſelves in the caſe of the deaf man of *Chartres*, of whom the great *Fontenelle* firſt gave us the hiſtory, when he heard for the firſt time the aſtoniſhing noiſe of bells at forty years of age.

Would it be therefore abſurd to think that thoſe firſt mortals eſſayed in the manner of this deaf perſon, or after the manner of animals and mutes, (another kind of animals) to expreſs their new ſenſations by motions dependent on the oeconomy of their imagination, and conſequently afterwards by ſpontaneous ſounds proper to each animal; theſe being the natural expreſſion of their ſurprize, joy, tranſports, or wants? For certainly thoſe whom nature has endued with a more exquiſite ſenſibility, have been favoured likewiſe with a greater facility to expreſs it.

Thus it is I conceive that men employed their ſenſation, or inſtinct, to obtain underſtanding, and afterwards their underſtand-

ing, to attain to knowledge. Theſe are the methods, as far as I comprehend, that have filled the brain with ideas, for the reception of which nature has formed it. One aſſiſted the other; and the ſmalleſt beginnings increaſing by degrees, every thing in the world came to be as eaſily diſtinguiſhed, as the circumference of a circle.

As the ſtring of a violin or harpſichord trembles and vibrates, ſo the fibres or ſtrings of the brain ſtruck by the undulating rays of ſound, are excited to return or repeat the words that touched them. But as the ſtructure of this organ is ſuch, that when once the eye formed for viſion has received the pictures of objects, the brain cannot help ſeeing their images and differences: in the ſame manner when the ſigns of theſe differences are marked or ingraved in the brain, the ſoul muſt neceſſarily examine their relations; an examination that would be impoſſible without the diſcovery of ſigns, or invention of languages. At that time when the world was almoſt mute, the ſoul was in regard of all objects as a man, who without having any idea of proportion, ſhould look on a picture, or a piece of ſculpture: or as a little child (for the ſoul was then in its infancy) who holding in his hand a parcel of ſtraws or bits of wood, ſees them in general in a vague ſuperficial manner, without being able to count or diſtinguiſh them. But let us put a kind of flag or colours on that piece of wood for example, which we call maſt, and let another be

put

put on another like body; let the firſt that comes to hand be marked by the ſign 1. and the ſecond by the ſign, or cypher 2. then this child will be able to count them, and thus by degrees he will learn arithmetic. As ſoon as one figure appears to him equal to another by its *numerical* ſign, he will conclude without difficulty that they are two diſtinct bodies, that 1 and 1 make 2; and 2 and 2 make 4, &c. *

'Tis this real or apparent ſimilitude of figures, that is the fundamental baſis of all truths, and of all our knowledge, amongſt which it is certain that thoſe whoſe ſigns are leſs ſimple and leſs ſenſible, are harder to be learnt than the others; becauſe they require more genius to embrace and combine that immenſe quantity of words, by which the ſciences I have mentioned expreſs their reſpective truths: whereas thoſe ſciences that are expreſſed by cyphers or by other little ſigns, are eaſily learnt. And without doubt 'tis this facility that has eſtabliſhed the reputation of algebraical calculations, more than their evidence.

All this knowledge therefore, the vanity of which puffs up the giddy brain of our ſupercilious pedants, is nothing but a vaſt heap of words and figures, which form in the head the traces by which we diſtinguiſh and remember objects. All our ideas

* There are people at this day, that for want of a greater number of ſigns, can only count to 20.

are revived, as a gardner that knows the plants, remembers their names as ſoon as he ſees them. Theſe words and figures are ſo connected in the brain, that we rarely happen to imagine a thing without the name, or the ſign thereto annexed.

I always uſe the word *imagine*, becauſe I am of opinion that every thing is imagined, and that all the parts of the ſoul may be juſtly reduced to the imagination only, which forms them all; and thus the judgment, reaſon, and memory are not abſolute faculties of the ſoul, but real modifications of this kind of *medullary ſubſtance*, on which the objects painted in the eye are reflected, as from a magic lanthorn.

But if ſuch be this wonderful and incomprehenſible reſult of the organization of the brain, if all is conceived, all explained by the imagination, why ſhould we divide the ſenſitive principle, which thinks in man? Is not this a manifeſt contradiction in the partizans for the ſimplicity of the mind? For whatever is divided, cannot without abſurdity, be looked upon as indiviſible. See to what the abuſe of language reduces us; and the uſe of theſe pompous words *ſpirituality*, *immateriality*, often placed by chance, without being underſtood even by men of parts.

Nothing is more eaſy than to prove a ſyſtem founded as this, upon the internal ſenſe and particular experience of each individual. If the imagination, or that fantaſtical part of the brain, whoſe nature is as unknown to us, as

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its manner of acting; if the imagination, I ſay, be naturally little, or weak, it will find a difficulty in comparing the analogy or reſemblance of its ideas; it will be able to ſee only juſt what is oppoſite to it, or makes the moſt lively impreſſion: but ſtill it is true that the imagination alone perceives, that it is it which repreſents all objects, with the words and figures that characteriſe them, and thus it is the imagination that is the ſoul, becauſe it performs all its operations. By its flattering pencil the cold ſkeleton of abſtract reaſon aſſumes living and vermillion fleſh; by it the ſciences flouriſh, arts are embelliſhed, woods ſpeak, echoes ſigh, rocks weep, marble breathes, and all the inanimate bodies are ſuddenly inſpired with life. 'Tis it that adds to the tenderneſs of an amorous heart the poignant taſte of pleaſures; it makes love bud in the cabinet of the philoſopher, and duſty pedant: in fine it forms the ſcientific men as well as orators, and poets. Fooliſhly decried by ſome, and vainly extolled by others, by whom it has been alike miſunderſtood, it waits on the graces and liberal arts, and not only paints nature, but is alſo capable to meaſure it. The imagination perceives, reaſons, judges, penetrates, compares and dives into things. Is it poſſible it ſhould ſo perfectly perceive the beauties of pictures ſet before it, without diſcovering their relations? By no means; as it cannot attend to the pleaſures of ſenſe without taſting their full perfection and enjoyment, ſo it cannot reflect upon what

it

it has mechanically conceived, without being then the judgement itſelf.

The more we exerciſe the imagination or the pooreſt genius, the more it improves, the more it grows, and becomes nervous, robuſt, large, and capable of thinking. The beſt organization has need of this exerciſe.

Organization is the principal merit of man; in vain do *Ethic* writers refuſe to rank amongſt valuable qualities, thoſe which we directly receive from nature, but ſuch talents only as are acquired by dint of reflection, and induſtry. For whence comes, I pray you, ſkill, ſcience, and virtue, but from a diſpoſition that renders us proper to become ſkilful, knowing, and virtuous? And whence comes this diſpoſition but from nature? We have no valuable qualities without her; we are indebted to her for what we are. Why therefore ſhould I not as much eſteem thoſe who are poſſeſſed of natural qualities, as thoſe who ſhine with acquired, and as it were borrowed virtues? Whatever the merit be, from whence ſoever it comes, it is worthy of eſteem: the point is only to know how to meaſure it. Wit, Beauty, riches, nobility, tho' children of chance, have all their value, as well as addreſs, knowledge, virtue, *&c.* Thoſe whom nature has favoured with her moſt precious gifts, ought to pity thoſe to whom they are denied; but they may know their own ſuperiority without pride, and as equitable judges. A beautiful woman would be as ridiculous in thinking herſelf ugly, as a man of ſenſe in taking himſelf

ſelf for a fool. An extravagant modeſty (a rare quality indeed) is a kind of ingratitude towards nature. On the contrary an honeſt pride is the mark of a great and noble ſoul, diſtinguiſhed by maſculine lines, that are moulded as it were by reaſon and ſentiment.

If organization be a primary merit, and the ſource of all the reſt, inſtruction is the ſecond. The beſt framed brain without it would be to no purpoſe; as without the knowledge of the world, the beſt made man would be but a groſs peaſant. Beſides what would the very beſt ſchool avail without a matrix perfectly open for the entrance, or conception of ideas? It is as impoſſible to give a ſingle idea or notion to a man, deprived of his ſenſes, as it is to get a woman with child, to whom nature in a hurry has denied a womb; as I once ſaw in one, who had neither a ſlit, vagina, nor matrix, and therefore was divorced after ten years co-habitation.

But if the brain be at the ſame time well framed and inſtructed, it is a fruitful and well ſown ſoil, that produces a hundred fold to what it received: or (to leave the figurative ſtile which is often neceſſary the better to expreſs what we feel, and to give new graces to truth itſelf) imagination raiſed by art to the ſublime and rare dignity of genius, apprehends exactly all the relations of the ideas it has conceiv'd, with facility comprehends an aſtoniſhing variety of objects, to infer from thence a long chain of conſequences, which are ſtill but new relations, produced by the

the compariſon of the former, with which the ſoul finds a perfect reſemblance. Such is, methinks, the generation of the underſtanding. I ſay *finds*, as I gave before the epithet of *apparent* to the ſimilitude of objects. Not that I think our ſenſes are always deceitful, as father *Mallebranche* pretends, or that our eyes naturally ſomewhat fallacious, ſee not the objects ſuch as they are in themſelves, tho' microſcopes prove it every day; but to have no diſpute with the *Pyrrhoniſts*, amongſt whom Mr. *Bayle* has diſtinguiſhed himſelf.

I ſay of truth in general what *Fontenelle* ſays in particular, that it muſt be ſacrificed to the pleaſures of ſociety. It becomes the civility of my character to obviate all diſpute, unleſs ſuch as enlivens converſation. In vain would the *Carteſians* come here to attack me with their *innate ideas*; I certainly ſhould not give myſelf a fourth part of the trouble, that Mr. *Locke* has taken to explode ſuch chimæras. What would it ſignify, in fact to write a large volume, in order to prove a doctrine, that was conſidered as an axiom three thouſand years ago?

According to the principles here laid down, and which I really look upon as true, he that has moſt imagination ought to be regarded as endowed with moſt wit, and genius; for all theſe words are ſynonimous; and once more I ſay it, 'tis a ſhameful abuſe, to think as we often do, that we are ſpeaking of different things, when we are only uſing different words or ſigns, to which we have annexed no idea, or real diſtinction.

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The fineſt, the greateſt, and the ſtrongeſt imagination, is therefore the propereſt for the ſciences as well as arts. I do not pretend to decide, whether more underſtanding be requiſite to excell in the art of *Ariſtotle*, or *Deſcartes*, than in that of *Euripides*, or *Sophocles*; or whether nature put herſelf to greater expence to make a *Newton*, than to form a *Corneille* (a point I much doubt of) but certain it is, that the imagination alone differently applied, has formed their different triumphs, and rendered their memories immortal.

If a perſon is ſaid to have but little judgment with a ſtrong imagination, this is as much as to ſay, that the imagination being too much abandoned to itſelf, and almoſt conſtantly employed in looking at itſelf in the mirror of its ſenſations, has not ſufficiently contracted the habit of examining them with attention: being more deeply moved with the traces and images, than with their truth or reſemblance.

True it is, that ſuch is vivacity of the ſprings of the imagination, that if attention, that key or mother of ſciences, does not aſſiſt, it can only run ſlightly over the objects.

Like that bird on yonder ſpray, the imagination ſeems to be perpetually ready to take wing. Hurried with inceſſant rapidity by the vortex of the blood and animal ſpirits, one undulation makes an impreſſion, which is immediately effaced by another; the ſoul purſues it, but often in vain: ſhe muſt wait to bewail the

loſs of what ſhe did not quickly lay hold of; and thus it is that the imagination, true image of time, is inceſſantly deſtroyed and renewed.

Such is the chaos, ſuch the rapid and continual ſucceſſion of our ideas; they drive one another ſucceſſively, as one wave impels another; ſo that if the imagination does not employ a part of its muſcles, poiſed as it were in an equilibrium upon the ſtrings of the brain, ſo as to ſuſtain itſelf ſome time on a fleeting object, and to avoid falling upon another, which it is not yet proper time to contemplate, it will never be worthy of the beautiful name of judgment. It will give a lively expreſſion of what it has felt; it will form orators, muſicians, painters, poets, but not one philoſopher. On the contrary, if from our infancy the imagination be accuſtomed to bridle itſelf; not to give way to its own impetuoſity, which forms nothing but ſplendid enthuſiaſts; to ſtop, to contain its ideas, and to revolve them in every ſenſe, in order to view all the appearances of an object: then the imagination ready to judge, will embrace by reaſoning the greateſt ſphere of objects, and its vivacity, which is always a good omen in children, and only needs the regulation of ſtudy and exerciſe, will become a clear-ſighted penetration, without which we can make little progreſs in the ſciences.

Such are the plain foundations upon which the ſtructure of logic is erected. Nature deſigned them for the whole human ſpecies; but ſome

ſome have profited thereby, and others have only abuſed them.

In ſpite of all theſe prerogatives of man over brutes, 'tis an honour to him to be ranked in the ſame claſs. True it is, that 'till a certain age, he is more an animal than they, becauſe he brought leſs inſtinct with him into the world.

What animal is there that would die with thirſt in the midſt of a river of milk? none but man. Like to that old child of which a modern makes mention after Arnobius; he knows neither the food that is proper for him, nor the water that may drown him, nor the fire that may reduce him to aſhes. Hold a blazing candle for the firſt time before a child, he will mechanically put his finger to it, to know what this new phænomenon he ſees is; at his own expence he will learn the danger, but he will not be catched again.

Put him with an animal upon the brink of a precipice; he alone will fall into it: he will be drowned, where the other will ſave himſelf by ſwimming. At fourteen or fifteen years of age, he ſcarce has a notion of the great pleaſures that will attend him in the reproduction of his ſpecies; when a youth he knows not readily how to go about a ſport which nature ſo quickly teaches all animals: He hides himſelf, as if he were aſhamed to enjoy pleaſure, and to be formed to be happy, whilſt other animals ſeem to glory in being *Cynics*. Without education they are

without prejudice. Let us obſerve the boy and dog, that have both loſt their maſters in the high way; the child cries, he knows not whom to apply to. The dog better ſerved by his ſcent, than the other by reaſon, will ſoon find his maſter out.

Nature has then made us inferiour at firſt to other animals, to the end that we ſhould by this means diſplay to greater advantage the wonderful effects of education, which is the only thing that raiſes us from a level with the brutes, and exalts us above them. But can we likewiſe allow the ſame ſuperiour diſtinction to thoſe who are born deaf or blind, to idiots, to madmen, to the wild and ſavage part of mankind, or thoſe who have been bred up among the beaſts in the woods, to thoſe who are overpower'd by melancholy, and their imagination deaden'd; in ſhort to all thoſe human brutes, who are guided by inſtinct alone, and that the dulleſt ſort? No, all theſe partake of the nature of the body, and not of the underſtanding, and therefore are not to be conſidered as a particular claſs of beings.

We do not intend here to affect an ignorance of thoſe objections, which may be made againſt our opinion, in defence of that ſuperiour diſtinction ſo long attributed to man over other animals. There is, ſay they, a law of nature, a knowledge of right and wrong deeply imprinted on the mind of man, which, in other animals, is not perceived.

But

But is this objection, or rather aſſertion, founded upon experience? for without this a philoſopher may reject every thing. Have we one argument of this ſort to convince us that man alone is enlighten'd with the rays of reaſon, from which all other creatures are excluded? If we have not, we can no more know what paſſes within them, or even within men, than we can form an idea of the inward part of our own being. We know that we think, and that we are ſtung with remorſe after we have done any guilty action; inward reflection makes us feel the force of this truth; but when we have a mind to form a judgment on the remorſe of another perſon, then we become ſenſible that this inward reflection is inſufficient for that purpoſe. Hence we muſt give credit to other men upon their words, or we muſt rely upon thoſe outward and viſible ſigns, which we have obſerv'd to prevail in ourſelves in the like caſe, when we feel the ſame conſciouſneſs of guilt, accompanied with the ſame uneaſineſs.

In order therefore to determine whether thoſe animals which have not the uſe of ſpeech, have receiv'd a law of nature, we muſt have recourſe to the conſideration of theſe outward ſigns, which have been mentioned, ſuppoſing they exiſt, which ſeems to be made evident by real facts. A Dog, upon ſome provocation, bites his maſter; and no ſooner has he done it but he appears to be mov'd with repentance; you may

may ſee him ſorrowful, uneaſy, aſham'd to ſhew his face, and confeſſing his guilt by his crouching humble behaviour. Hiſtory furniſhes us with a famous inſtance of a lyon, who refrain'd from tearing to pieces a man whom he had in the power of his clutches, becauſe he recollected him to be the perſon who had formerly been his benefactor. How much is it to be wiſhed that man would in all caſes ſhew the ſame grateful ſenſe of generous actions; and the ſame degree of humanity? Then we ſhould have no occaſion to be afraid of ingratitude; then we ſhould have no reaſon to dread the terrors of war, which is become the ſcourge of mankind, and the ſubverter of all the laws of nature.

But a being on whom nature has beſtow'd an inſtinct ſo early ripe, ſo full of inſight, who judges, who connects cauſes as well as their conſequences, who reaſons and deliberates as much as the ſphere of his activity allows, and ſo far as it extends: A being whoſe affection is gain'd by kind treatment, and whoſe friendſhip we loſe by a contrary uſage, and whom we ſee frequently going in queſt of another maſter: A being reſembling our own in the curious contrivance of its ſtructure, who performs the ſame operations, who has the ſame paſſions, the ſame pain, the ſame pleaſures, more or leſs lively, as they are influenced by the power of the imagination and the delicacy of the nerves: in ſhort does not ſuch a being as this give us the cleareſt demonſtration, that it feels the injuries

injuries done to itſelf, as well as thoſe it does to others; that it knows a right and a wrong, and in fine has a conſciouſneſs of what it does? This being has a ſoul, which, like ours, feels the ſame joys, the ſame misfortunes, the ſame diſappointments; and can we help concluding that this being will feel an inward horror at the ſight of any of its own ſpecies torn to pieces, or can it avoid being touch'd with remorſe when guilty itſelf of a piece of cruelty of this nature? Theſe things being granted, that valuable gift, the ſubject of our preſent enquiry, cannot be deny'd to other animals; for ſince they give us evident marks of their repentance and underſtanding, where can be the abſurdity to conclude that beings, who are as perfect machines as ourſelves, are fram'd to think like us, and to feel the law of nature?

Here let it not be objected againſt me that other animals are in general fierce beings, and inſenſible of the evil they commit; for do all mankind diſtinguiſh vice and virtue better than they do? There is a ſort of fierceneſs in our kind as well as theirs. The uncivilized part of mankind who have been nurs'd up in barbarity, and accuſtomed to break thro' all the laws of nature, do not feel that inward uneaſineſs from a tranſgreſſion of this kind, which thoſe ſuffer who make the firſt breach of this nature, and have not yet been inur'd to it by the force of example. Thus it is with other animals as well as men; all of them become more

more or leſs fierce according to their conſtitutions, and ſtill more ſo when they live amongſt others who are of ſavage diſpoſition. But an animal of a mild and peaceable nature, which herds among others of the ſame complexion, and lives on ſoft nouriſhment, will have a ſtrong antipathy to blood and ſlaughter, and will bluſh inwardly when guilty of cruelty; with this difference, that as amongſt them all is ſacrific'd to neceſſity, pleaſure, and the conveniences of life, of which they have more enjoyment than we, ſo their remorſe ought not to appear ſo ſharp as ours, becauſe we are not preſs'd by the ſame neceſſity as they are: cuſtom takes off the edge, and perhaps ſtifles remorſe, as much as the purſuit after pleaſure.

But I ſhall ſuppoſe that I am miſtaken, and that it is unreaſonable to imagine all mankind to be in the wrong while I alone am in the right; I ſhall grant then that other animals, even the higheſt ſort of them, are entirely ignorant of moral good and evil, that they do not retain in their memory any remembrance of regard ſhewn, or kindneſs done to them, and have not the leaſt knowledge of their own virtues: That this lion, for example, which I as well as ſo many others, have made mention of, had not the leaſt remembrance of what was paſt, when he ſpar'd the life of that man who was delivered to his fury at a publick ſhew; a ſhew in its nature more inhuman than any thing we

can

can poſſibly behold amongſt lions, tygers, or bears: all this, I ſay, I may grant whilſt men go on in their uſual way, country-men fighting againſt country-men, *Swiſs* againſt *Swiſs*, and brothers againſt brothers, and tho' known to each other, yet enſlave and kill one another, becauſe they are paid by ſome prince for their murders. In fine then, let us ſuppoſe, that the law of nature has not been given to other animals, what are the conſequences which will thence follow? Man is fram'd of materials, not exceeding in value thoſe of other animals; nature has made uſe of one and the ſame paſte, ſhe has only diverſify'd the ferment in working it up. If then animals do not feel an inward repentance after the violation of that inward conſciouſneſs which I have been mentioning, or rather, if they are entirely deſtitute of it, then of neceſſity muſt man be reduc'd to the ſame ſituation: then farewell to the law of nature, and all thoſe elaborate treatiſes which have been wrote upon this ſubject! The whole animal kingdom will then be in the ſelf ſame ſtate. But on the other hand, if man will own that, when he is in health and has the natural enjoyment of himſelf, he cannot but diſtinguiſh the honeſt, the humane, and virtuous part of mankind, from thoſe who are void of honeſty, virtue, and humanity; that he can diſtinguiſh virtue from vice, by that inward ſatisfaction which he feels in the one, and that natural repugnancy which he finds in the other;

both which are effects flowing from nature; thence it follows that other animals form'd of the ſame matter, which only wants a higher degree of fermentation to make them equal to man in every thing; it follows I ſay from what has been ſaid that, as animals they muſt partake of the prerogatives of the animal kind, and thus there can be no ſoul or ſenſitive ſubſtance, which is not capable of being touch'd with remorſe. The following reflection will further ſtrengthen what has been ſaid.

The law of nature cannot be deſtroy'd. The impreſſion of it is ſo deeply engraved in all animals, that I make not the leaſt doubt, but the moſt fierce and ſavage feel, at certain times the inward ſhocks of repentance. I dare ſay, that ſavage woman, of the city of *Chalons* in *Champagne*, who is ſaid to have eaten her own ſiſter, muſt have ſuffered an inward puniſhment for her crime. I am of the ſame opinion with regard to all thoſe who are guilty of crimes, tho' they have been involuntary, or proceeding from their natural conſtitution: ſuch as *Gaſton* of *Orleans*, who could not keep his hands from pilfering, and a certain woman who was ſubject to the ſame vice, when ſhe was with child, and whoſe children inherited her thieving diſpoſition; ſuch alſo as the woman in the ſame province, who devoured her own huſband; and that wretch who murdered her own children, then ſalted their bodies, and eat of them every day as of a delicious morſel; as the daughter likewiſe

of

of a robber and cannibal, who tho' ſhe had loſt both her father and mother when ſhe was but a twelve month old, and had been bred up by honeſt people, yet ſhe follow'd her father's profeſſion by the time ſhe was twelve years of age: not to mention a great many other examples which every where occur to curious obſervers, and which ſerve to prove that there are numberleſs hereditary vices as well as virtues, which are communicated from parents to their children, in the ſame manner as from nurſes to thoſe whom they ſuckle. I ſay then, and I agree that thoſe guilty criminals, for the moſt part, do not immediately feel the heinouſneſs of their actions. *Bulimy*, for example, or in other words, the canine appetite may extinquiſh all inward reflection; this is a madneſs which rages in the ſtomach, and muſt be ſatisfied. But when ſuch barbarous women as theſe come to themſelves, when they return to their ſober ſenſes, how then will they be tortured with the ſtings of remorſe, after being ſenſible that they have murder'd what was moſt dear and precious to them! what a dreadful puniſhment will then follow a crime, which in them was involuntary, which they could not reſiſt, and they were not conſcious of: but however this will ſerve as no excuſe in a court of juſtice. Of theſe women one of them was broke on the wheel and burnt, and another was bury'd alive. I am ſenſible that the intereſt of ſociety requires all this rigour. But however it is much to be wiſh'd that we had none for judges, but the moſt

ſkilful phyſicians. They alone could diſtinguiſh the guilty, from the innocent. If reaſon is the ſlave of depraved, or diſtracted ſenſe, how then can it be expected, that at that time it ſhould be governor?

But ſince guilt carries along with it its own puniſhment more or leſs ſevere; ſince, if we had been never ſo long accuſtom'd to the moſt barbarous actions, yet this could not utterly extinguiſh all repentance in the moſt inhuman hearts; if men are thus rack'd with the remembrance of their guilt, what occaſion is there then, to confound weak underſtandings, and ſtartle their imagination with the notion of hell, apparitions, and precipices of fire, that have leſs reality in them than thoſe of *Paſchal** ? What occaſion is there to have recourſe to fabulous ſtories, as an honeſt pope himſelf frankly confeſs'd, to add ſtill more torture to thoſe unhappy criminals that are about to periſh, as if they had not ſuffer'd ſufficiently from the ſtings of their own con-

* *Either in company, or at table, he uſed always* to have a kind of fence made of chairs, or ſome body cloſe to his left hand, to hinder him from ſeeing the frightful abyſſes, into which he was ſometimes afraid of falling, notwithſtanding he knew perfectly well that this was all an illuſion. What a frightful effect of the imagination, or of a ſingular circulation in a lobe of the brain! As great a man as he was on the one hand, on the other he was half a fool. Folly and Wiſdom had each their partition, or lobe, ſeparated by a ſcythe. On which ſide did he adhere ſo ſteadily to the gentlemen of *Port-Royal?* This fact I have met with in an extract of a treatiſe of a dizzineſs by Monſieur *de la Mettrie.*

ſcience

ſcience which is their firſt executioner? I mean not here to ſay that all criminals are unjuſtly puniſhed; what I maintain is, that thoſe, whoſe will has been depraved, and conſcience extinguiſh'd, are ſufficiently puniſhed by remorſe when they come to themſelves, tho' nature methinks ought to have exempted in this caſe from remorſe, thoſe unhappy wretches who were dragg'd along by a fatal neceſſity.

The miſchievous, the wicked, the ungrateful, thoſe in ſhort who do not feel natural ſympathy, tyrannical princes unworthy to enjoy life, all theſe may take an unnatural pleaſure in their cruelty, but ſtill there will come ſome moments of calmneſs and reflection, when the avenging conſcience rouſes itſelf, and becoming evidence againſt thoſe criminals, condemns them to be almoſt without interruption torn to pieces by their own hands. He who torments mankind, becomes his own tormentor; and the miſeries, which he himſelf ſhall ſuffer, will be in a juſt proportion to thoſe, which he has been the cauſe of to others.

On the other hand, there is ſuch an unexpreſſible pleaſure in doing good, and in retaining a grateful ſenſe of the good done to us by others; there is ſo much inward ſatisfaction in the practice of virtue, there is ſuch a deal of contentment, in being benevolent, humane, tender hearted, charitable, compaſſionate and generous (this one word includes all the virtues) that I cannot help thinking

that

that man is ſufficiently puniſhed, who has had the misfortune not to be born virtuous.

We were not originally fram'd to become learned; nay it is perhaps by a ſort of abuſe of our organized faculties, that we become ſo; and this too at the expence of the ſtate, which ſupports a number of lazy drones, whom vanity has deck'd with the title of philoſophers. Nature has created us all to be happy; all I ſay from the worm that creeps, to the eagle that ſoars aloft in the clouds. For this reaſon ſhe has given to all animals a certain portion of the law of nature, more or leſs exquiſite, according to the different organs of each animal.

How ſhall we then at preſent define the law of nature? It is an inward principle, which inſtructs us in what we ought not to do to others, by putting us in mind of what we ſhould not chooſe to be done to ourſelves. May I be allow'd to adjoin to this general idea, that methinks this inward principle is nothing but a ſort of fear or dread equally uſeful to the whole ſpecies and each individual; for perhaps we keep our hands from the purſes and lives of other men, in order that we may the better ſecure our own life and property from violence; in this not a little reſembling thoſe Ixions of chriſtianity who love God out of fear of hell, and thro' this ſlaviſh apprehenſion embrace ſo many ridiculous tenets.

You ſee then that the law of nature is nothing but an inward principle which belongs

to

to the imagination, as well as all others, amongſt which we reckon thought. Conſequently it ſuppoſes neither education, nor revelation, nor a law giver, at leaſt it is not to be confounded with the civil laws, after the ridiculous manner of the divines.

Mad *Enthuſiaſts* with their arms may deſtroy the ſupporters of theſe truths; but the truths themſelves can never be deſtroyed.

I do not here intend to call in queſtion the exiſtence of a ſupreme being; on the contrary I am of opinion that the greateſt degree we can have of probability makes for this truth: but as this exiſtence does not prove the neceſſity of one ſort of worſhip more than another, we muſt therefore look upon it as a theoretical truth, which is but of little uſe in practice. As we may therefore ſay, after a deal of experience, that religion does not ſuppoſe ſtrict probity, ſo the ſame reaſons give us foundation to think that atheiſm does not exclude it.

Beſides who knows but the cauſe of the exiſtence of man, may be in the very exiſtence itſelf? Perhaps he has been thrown by chance upon ſome ſpot of the ſurface of the earth, without a poſſibility of diſcovering why or whence he came; and with this knowledge only that he muſt live and die; like to thoſe muſhrooms which appear to day and are gone to morrow, or to thoſe flowers which ſprout up in ditches, or cover walls.

Let us not therefore loſe ourſelves in infinity,

finity, ſince we are incapable of having the leaſt idea of it: it is impoſſible for us to trace the original of things; it is a matter really indifferent as to our happineſs, whether matter has been from all eternity, or was created; whether there is or is not a ſupreme being. What folly then is it to torment oneſelf ſo much in ſearching after what is impoſſible to know, and which could not add any thing to our preſent felicity even if we were to gain our point.

But ſome will ſay to me, read the works of *Fenelon*, *Nieuwentit*, *Abadie*, *Derham*, *Ray*, &c. Well, what after reading them? wherein will they inſtruct me? or rather, wherein have they inſtructed me? theſe works are nothing but the tireſome repetitions of enthuſiaſtick writers, who only add more and more fuſtian to each other, more proper to ſtrengthen than undermine the foundations of atheiſm. The multitude of proofs which they collect from the beauties of nature diſplay'd, does not add to their ſtrength. The ſtructure of one finger alone, an ear, an eye, an obſervation of *Malphigi*, is able to prove all, and certainly more than *Deſcartes* or *Mallbranche*; or all the reſt proves nothing. The deiſts and chriſtians too ought to content themſelves with this obſervation, that, in the whole animal ſyſtem, the ſame ends are come at by an infinite number of different ways and means, and all theſe the moſt exactly geometrical. And what ſtronger arms than theſe can we make uſe of to pull down

down the inſolence of atheiſts? it is true, indeed, that if my reaſon is not miſtaken, man, and the whole univerſe, ſeem to be deſtin'd for one and the ſame end. The ſun, the air, the water, the organization and form of bodies, are all rang'd in order in the eye, as in a looking-glaſs, which repreſents to the imagination the pictures of all the objects painted there, according to the laws of viſion, which prevail amongſt that numberleſs variety of particles or corpuſcles. In the ſtructure of the ear, we find every where a moſt amazing variety; and tho' the mechaniſm of this organ is different in man, as well as in beaſts, birds, and fiſhes, yet this does not produce different effects. The ears of all are made with ſuch exquiſite mathematical ſkill, that they all tend to one and the ſame end, which is to hear. Can chance then, ſays the deiſt, be ſo admirable a geometrician, thus at pleaſure to diverſify the works of the creation, of which ſome ſuppoſe it to be the author; and yet notwithſtanding this variety, nothing be hindered, nothing obſtructed, but all purſue the ſame grand deſign and univerſal end. He goes on and urges ſtill more in defence of his opinion; he takes notice of thoſe parts which are contain'd in the animal for future purpoſes, ſuch as the butterfly in the caterpillar, man in the ſpermatick animalcule, a polypus entire in all its parts, the valve of the *foramen ovale*, the lungs to be obſerv'd in the fœtus, the teeth, tho' not viſible to the naked eye, yet lodg'd in their ſockets, the

bones, which ſeeming to be mix'd with the fluids, yet ſeparate and grow ſolid in the moſt unconceivable manner. And as the advocates for this ſyſtem, call into their aid whatever may contribute to ſupport it, and are inceſſantly bringing proofs upon proofs, they want to make every thing ſerve to promote their cauſe; nay, even weakneſs of underſtanding itſelf, in ſome particular caſes. Behold, ſay they, your Spinozas, your Vaninis, your Deſbarreaus, your Bodins, all of them do more honour than injury to the cauſe of deiſm! no ſooner have theſe men been weak or ſickly, but they have forſaken their infidelity: And it ſeldom happens, add they, that the atheiſt does not renounce his opinion, when the paſſions come to be weaken'd with the body their inſtrument.

This is then the ſum of all the moſt material proofs which can be brought in favour of a deity; tho' the laſt argument indeed is but frivolous, becauſe theſe alterations of opinion are generally ſhort and ſudden, the mind generally reſuming its former ſentiments, as ſoon as it has recover'd its proper vigor, together with the uſual ſtrength of the body. Here let us conſider what the phyſician *Diderot* has ſaid in his philoſophical thoughts, a moſt noble performance, yet it will not be able to convince a real atheiſt. What, indeed, can we anſwer to a man who ſays, "We know not "nature; the ſecret cauſes which are hidden "in her boſom, might have produced every "thing. Examine the polypus of *Trembley*;

"does

" does it not contain in itſelf the cauſes of its " regeneration? what an abſurdity then is it " to think that there are phyſical cauſes for " which all has been made, and to which the " whole chain of this vaſt univerſe has been " connected and made ſubſervient; and that " there is not one thing happens which could " have avoided being ſo: our ignorance in " theſe cauſes being unſurmountable, this has " even made us have recourſe to a deity, who " according to ſome, is not even an *ens rationis*. " Thus when we deſtroy chance, we do not " then prove the exiſtence of a ſupreme being, " ſince it is poſſible there may be ſomething " elſe which is neither chance nor deity; what " I mean is nature, the ſtudy of which " will only make infidels, as we find the " curious ſearchers into nature generally " are."

The weight of the whole univerſe then, is ſo far from cruſhing to pieces, that it does not in the leaſt ſhake the true atheiſt: and all thoſe evidences of a creator, a thouſand and a thouſand times repeated, which are greatly above the comprehenſion of creatures like us, are not evidences, however far they may puſh the argument, unleſs it is to the antipirrhonians, or to thoſe who put ſo much confidence in their reaſon, as to imagine themſelves able to form a judgment on certain appearances, in oppoſition to which you ſee atheiſts are able to bring others quite contradictory, and perhaps as ſtrong. For if we liſten a little more to what naturaliſts ſay, they will tell us, that the

ſame cauſes which have conſpir'd, as it were by chance-medley, to form a looking-glaſs in the hands of the chemiſt, have, in like manner, contributed to create pure water in the hands of nature, which ſerves as a mirrour to the ſimple ſhepherdeſs: they will tell you too, that the ſame motion which upholds and preſerves the world, was likewiſe able to give it a being; that every body has taken the place aſſign'd to it by nature; that the air encompaſſes the earth for the ſame reaſon; that iron and other metals, become the workmanſhip of its intrails; that the ſun is as much the production of nature as electricity; that it was no more made to give warmth to the earth and its inhabitants, which ſometimes it burns, than the rain was form'd to make the fruits of the earth to bloſſom, which are frequently ſpoiled thereby; that the mirrour and water were no more made to ſee ourſelves in them, than other poliſh'd bodies which have the ſame property; that the eye is, in reality, a ſort of peep-hole, thro' which the ſoul can view the images of objects, according as they are repreſented from different bodies; but that it cannot be demonſtrated that this organ has been fram'd on purpoſe for this particular uſe, nor expreſsly ordain'd to be plac'd in any particular ſituation: and in ſhort that *Lucretius*, doctor *Lamy*, and the reſt of the modern as well as antient Epicureans, were in the right when they maintain'd, that the eye ſees for no other reaſon but becauſe it is organized, and placed as it is; that when once the

rules

rules of motion were determin'd, which nature was to obſerve in the generation and production of bodies, then it was impoſſible that this wonderful organ could be organized or placed in a different manner than it is.

Theſe are the proofs advanc'd pro and con; this is the ſum of all the important arguments which have ſo long divided our philoſophers. As for my own ſhare, I take no part in the diſpute.

Non noſtrum inter vos tantas componere lites.

This is what I ſaid to a *French* gentleman, one of my friends, as openly profeſs'd a pyrrhoniſt as myſelf; a man of very great merit, and worthy of a better fate. He gave me a very remarkable anſwer upon this ſubject: certain it is, ſaid he, that the arguments which are advanced on each ſide of the queſtion, ought not to diſturb the ſoul of a philoſopher, who ſees that there can be nothing demonſtrated with clearneſs ſufficient to gain his aſſent; and no ſooner are proofs brought on one ſide, but they are immediately deſtroy'd by others from the oppoſite ſide of the queſtion. In the mean time, ſaid he, mankind can never be eſteem'd happy, unleſs they be atheiſts. Let us ſee what were the arguments of this impious man. If atheiſm, continued he, was univerſally diffus'd, then all the different branches of religion would be rooted out, and utterly deſtroy'd. Then farewell to all holy wars, farewell to all the terrible ſoldiers of religion;

religion; nature being as it were tainted with the ſacred poiſon, would then reſume its rights, and purity every where. Happy mortals, being then deaf to every other vice, would entirely follow the pure dictates of their own individual nature, which we cannot deſpiſe with impunity, and which alone lead us to happineſs in the pleaſing paths of virtue.

Such is the law of nature, and whoever obſerves it ſtrictly, is a man of honeſty, and deſerves the eſteem and confidence of mankind; but whoever ſwerves from it, and affects an outward ſhew of ſome other religion, is an impoſtor as well as a hypocrite, whom I entirely diſtruſt.

After what has been ſaid, let the giddy multitude think otherways: let them affirm that honeſty itſelf muſt ſooner be ſacrific'd, than we ſhould withdraw our belief of revelation: in a word, that we muſt have another religion than that of nature, let it be what it will. What miſery! what pity! how high is the opinion of every one for that particular religion which he has embraced! We court not here the applauſe of the vulgar. He who rears up in his own mind altars to ſuperſtition, is born to worſhip idols, and was not deſign'd to feel the force and energy of true virtue.

But ſince all the faculties of the ſoul depend ſo much upon the proper organization of the brain, and of the whole body, that they appear evidently to be nothing but this organization itſelf; we may well call it an enlighten'd machine,

machine. For in ſhort, tho' man alone had receiv'd the law of nature, would he, for this reaſon, be leſs a machine? Some more wheels, ſome more ſprings, than are found in other animals, the moſt perfect; the brain in proportion ſeated more near the heart, and conſequently receiving more blood; the ſame reaſon likewiſe given; in fine, ſome unknown cauſe or another might have produc'd this conſcience which has ſuch delicacy and exquiſite feeling, that remorſe as foreign to matter as thought; in a word, all that difference or diſtinction which is here ſuppos'd. Will organization ſerve all theſe purpoſes? yes, I ſay once more, it will: ſince thought evidently unfolds itſelf with the organs, why may we not allow that matter, of which they are compos'd, to be likewiſe ſuſceptible of remorſe, when once it has by time acquir'd the power of feeling?

The ſoul then, is nothing but an empty term, of which we have no idea, and which a man of a right underſtanding ought to make uſe of, only to expreſs that part which thinks in us. The leaſt principle of motion being granted, then animated bodies will have all that's requiſite to make them move, feel, think, repent, in a word, enough to lead them into all the phyſical and moral conſequences which depend thereon.

We want nothing to be granted upon ſuppoſition alone. Thoſe who may think that we have not yet remov'd all the difficulties which

which lie in our way, ſhall have ſtill ſtronger proofs to ſatisfy their doubtful minds.

1. The bodies of all animals undergo a ſort of palpitation after death, the longer in proportion as the animal grows colder, and breathes leſs. Tortoiſes, lizards, ſerpents, *&c.* atteſt the truth of this obſervation.

2. The muſcles, tho' ſeparated from the body, yet ſhrink when you prick them.

3. The intrails of animals preſerve the periſtaltic or vermicular motion for a conſiderable ſpace of time.

4. A ſimple injection of warm water reanimates the heart and muſcles, according to *Cowper.*

5. The heart of a frog expos'd to the ſun, eſpecially on a table, or a warm plate, will move for an hour or more, after it has been taken out of the body. If the motion ſeems to be irrecoverably loſt, you need only prick the heart, and that hollow muſcle will again move. *Harvey* has made the ſame obſervation upon toads.

6. My lord *Bacon* in his treatiſe call'd *Sylva Sylvarum*, mentions a man convicted of treaſon, who was cut up alive, and his heart being thrown into warm water, leap'd ſeveral times, always leſs high, at the perpendicular diſtance of two feet.

7. Take a chick as yet in the egg, tear out the heart, and you will ſee the ſame phænomena, or ſuch as differ but very little. The heat alone of breath revives an animal ready to expire in the air-pump.

Theſe

Theſe experiments for which we are indebted to *Boyle* and *Steno*, are likewiſe to be ſeen in pidgeons, dogs, and rabbets, the very pieces of whoſe heart move as well as the entire heart itſelf. We may obſerve alſo the ſame motion in the intrails of a mole when torn out.

8. The caterpillar, the worm, the ſpider, the fly, and the eel afford us likewiſe the ſame obſervation; and the motion of the parts cut off encreaſes in the warm water, becauſe of the heat which is in the water.

9. A drunken ſoldier with a ſtroke of his cutlaſs cut off the head of a turky. The creature ſtood ſtill, afterwards walk'd, and then ran; but happening to daſh itſelf againſt a wall which was in its way, it turn'd ſhort, and clapping its wings, continued to run for ſome time, till at laſt it fell. The turkey being extended upon the ground, all the muſcles ſtill mov'd. This is what I myſelf have ſeen, and we may eaſily diſcover the ſame obſervations in little cats or dogs, when their heads are cut off.

10. The polypuſes do ſtill more than ſhew motion, after they are cut to pieces; they ſpring up again into life, and in the ſpace of eight days, there ariſes a production of as many animals as the pieces into which they were divided. I am diſſatisfied with the ſyſtem of naturaliſts concerning generation, or I ſhould rather ſay, I am pleas'd with it, ſince by it I am inſtructed, that I ought not to draw general concluſions even from the moſt evident and deciſive experiments.

Here then are a number of facts, even more than are requiſite, to give us the moſt undeniable proofs that every fibre, that the minuteſt parts of organized bodies, are put into motion by a principle inherent in themſelves; nor does their action depend upon the nerves, as if they were voluntary motions, becauſe theſe motions, the ſubject of our preſent enquiry, are performed whilſt the parts in which they happen, have no communication with the general circulation. Since this inward power ſhews itſelf ſo remarkably even in ſeparated parts of the fibres, it follows that the heart, which is a compoſition of fibres moſt curiouſly interwoven, muſt have the ſame property. *Bacon*'s hiſtory was not neceſſary to perſuade me of the truth of this. It was an eaſy matter to form my judgment, from the exact analogy of the human heart, with that of other animals; and likewiſe from the bulk of the human heart itſelf, in which this motion being ſtifled or confin'd, cannot be perceived; and in fine, becauſe all the veſſels become cold and collaps'd in dead bodies. If diſſections were to be made upon the bodies of executed criminals, while they were yet warm, then we ſhould ſee the ſame motions in the heart, which we obſerve in the muſcles of the faces of perſons who have been beheaded.

Such is the nature of this principle, which moves whole bodies, as well as the ſeparated parts, that it produces no irregular motions, as ſome have imagined, but preſerves the utmoſt regularity, both in animals which are entire

entire, and retain vital warmth, as well as amongſt thoſe which are cold, and imperfect. Our antagoniſts then, can have nothing to lay hold of, unleſs perhaps they take upon them to deny the truth of numberleſs facts, which any one may eaſily ſee confirm'd by experience.

If any one aſks me where this innate power of the body is ſeated: I anſwer that it has its reſidence in what the ancients call'd *parenchyma*; that is to ſay in the proper ſubſtance of the parts, abſtracting from the veins, the arteries, the nerves, in a word from the organization of the whole body; and that conſequently every individual part contains within itſelf ſprings more or leſs lively, properly ſuited to the occaſion there is for them.

Let us enter into a ſort of detail of thoſe ſprings which move the human machine; 'tis from theſe that all the vital, animal, natural, and mechanical motions proceed. Is it not by a certain mechaniſm that the body retires and ſhrinks, when frighten'd at the ſight of an unexpected precipice? That the eyelids wink when threaten'd with a blow? that the pupil of the eye, in broad day-light, contracts itſelf to preſerve the retina, and in darkneſs, dilates itſelf the better to ſee objects? Is it not by a ſort of mechaniſm that the pores of the body ſhut themſelves up in winter, to prevent the cold from penetrating into the veſſels? That the Stomach riſes, when provoked by poiſon, by a certain quantity of

opium, and by all ſorts of emetics, *&c.*? That the heart, the arteries, and muſcles have the ſame contraction when we are aſleep, as when awake? That the lungs perform the office of a pair of bellows continually in motion? Is it not by the ſame ſort of mechaniſm, that the *ſphincter veſicæ*, of the *rectum inteſtinum*, &c. all perform their operations? That the heart has a ſtronger contraction than any other muſcle? That the erecting muſcles make a man's yard ſtand, as may be ſeen likewiſe amongſt quadrupeds, and even in an infant when this part is ever ſo little irritated? And this by the by, proves that there is a particular ſpring in this member, as yet, but little underſtood, which produces effects that have not been thoroughly explained, notwithſtanding all the boaſted inſight into anatomy.

I ſhall not conſider further thoſe inferiour ſprings or principles, which are known to every body. But there is another more pure and more fine, which infuſes life into all the reſt. 'Tis this which is the ſource of all our ſentiments, of all our pleaſures, paſſions, and thoughts; for the brain has its proper muſcles for thinking, as well as the legs have theirs for walking. I mean that invigorating and impetuous principle which Hypocrates calls νοεμων (the ſoul). This principle exiſts, and is ſeated in the brain at the origin of the nerves, by means of which it exerciſes its dominion over the whole body. By this is explain'd, whatever is capable of expla-

explanation, even the ſurprizing effects proceeding from a diſtemper'd imagination.

But that we may not be at a loſs amidſt an abundance and copiouſneſs which we do not well underſtand, we ſhall confine ourſelves to a ſmall number of queſtions and reflections.

Why does the ſight, nay the very thinking of a fine woman, raiſe in us particular motions and deſires? Does what happens at this juncture in certain organs, proceed from the nature of the organs themſelves? Not at all, but from that communication and kind of ſympathy which theſe muſcles have with the imagination. The firſt ſpring or principle is excited by what the ancients call the *bene placitum*, or the image of beauty, which rouzes another ſpring that lay dormant when the imagination awaked it: And how can this be, if it is not owing to the tumult and diſorder of the blood and ſpirits, which flow with prodigious ſwiftneſs, and diſtend the cavernous bodies?

Since there are evident communications betwixt the mother and the infant*, and it is almoſt impoſſible to deny the facts produced by *Tulpius* and other authors of equal credit with him, we will therefore believe that it is by the ſame means that the fœtus feels the force of the mother's imagination, in the ſame manner as ſoft wax receives all ſort of impreſſions; and that the ſame traces, or

* At leaſt by means of the veſſels. And are we ſure that there is none by the nerves?

longings

longings of the mother, may be imprinted on the fœtus, tho' this cannot be comprehended, notwithſtanding all that has been ſaid to the contrary by *Blondel* and his adherents. Thus we repair the honour of Father *Mallebranche*, who has been much rallied for his credulity, by authors who have not enquired ſufficiently into nature, and who had a mind to make it entirely conformable to their own ideas.

Let us view the picture of the famous Mr. Pope, whom at leaſt we may call the *Engliſh* Voltaire. The efforts and nerves of his genius are ſtrongly repreſented in his phyſiognomy; it ſeems to be all in a ſort of convulſion; his eyes ſeem ready to ſtart from their orbit, his eye-brows raiſe themſelves with the muſcles of his forehead. Why all this? 'tis becauſe the ſource of the nerves is, as if it were in labour, and the whole body, if I may ſo ſay, feels the pangs of a painful delivery. If there is not an inward cord which thus forcibly pulls thoſe without, how can we account for theſe ſurprizing phænomena? In order to explain all this, if we admit a ſoul, this in effect would be the ſame as if we were to call in the operation of the holy ghoſt.

If that which thinks in my brain is not a real part of that organ, and conſequently of the whole body, why, when repoſed in bed I form in my mind the plan of ſome work, or am engag'd in ſome abſtract piece of reaſoning; why then I ſay, is the blood heated?

heated? Why does the fever of my mind ſpread itſelf into my veins? Put this queſtion to your great wits, to your poets, to thoſe who feel the beauty of a ſentiment that is fine and properly expreſs'd, or thoſe who are admirers of delicate taſte, who are in raptures when they behold the beauties of nature, and perfectly tranſported with the native charms of truth and virtue! When you ſee the enthuſiaſm of theſe perſons, and when they themſelves declare to you what they have felt, then when you may the better trace out the cauſe by the effects: By this harmony or agreement which one anatomiſt alone (*Borelli*) underſtood better than all the followers of *Leibnitz*, you will underſtand the material unity of man. For in ſhort ſince too great an extenſion of the nerves cauſes pain, and raiſes a fever, by which the mind is thrown into diſorder, and becomes delirious alternately; ſince in its turn the mind, when too much agitated, communicates the diſorder to the body, and kindles that conſuming fire which carried off *Bayle* at an age ſo little advanced; ſince ſuch a ſenſation makes me wiſh for, and raiſes in me the moſt ardent deſires of what perhaps I did not ſo much as think of the minute before; ſince certain traces of the brain likewiſe excite the ſame itching, and create the ſame inclinations; why ſhould we make a difference, or endeavour to make two things of what is apparently but one? It is ridiculous to exclaim againſt the dominion

nion of the will. For one order which it gives, a hundred times does it come under the yoke. And where is the wonder that the body when in health ſhould be ſubſervient, for how can it reſiſt that torrent of blood, and all thoſe ſpirits which are ready to force obedience, the will having for its miniſters an inviſible army of fluids, always ready to receive its orders, and as quick as lightening in the execution of them! But as it is by the nerves that the power of the will is exercis'd, ſo is it likewiſe by them that it is oftentimes check'd. Can the higheſt efforts of the will alone, bring aid to the exhauſted new married lover, or the greateſt warmth of deſire bring back his fallen vigour? Alas! they will be of no ſervice; nay, at this time the will muſt ſuffer the firſt puniſhment, becauſe at ſuch a juncture, it cannot avoid wiſhing to have a gratification of its pleaſure. What I have already ſaid about the palſy, *&c.* may be likewiſe underſtood here.

Do the effects of the jaundice ſurprize you! Do not you know that the colour of bodies appears to be the ſame as that of the glaſs thro' which you look at them? And do not you know that according to the colour of the humours, ſuch is that of the objects, at leaſt with reſpect to us, who are the vain ſport of numberleſs illuſions. But take away this colour from the aqueous humour of the eye, let the bile run in its proper channel, then the ſoul will have different eyes, nor will every object appear as before,

to

to be ting'd with yellow. Is it not in the ſame manner by couching the cataract, or by injecting *Euſtachius*'s tube, that ſight is reſtor'd to the blind, and hearing to the deaf. How many are there who perhaps have only been mere quacks in the ages of ignorance, who yet have had the fame of having perform'd the greateſt wonders! The ſoul, and the will tho' powerful, cannot act, but as the diſpoſitions of the body permit; nay, our very taſtes become different by the force of a fever, or the effects of age! Need we be ſurpriz'd then that philoſophers have always principally regarded the health of the body, as the only way to preſerve that of the ſoul? Is there any wonder that *Pythagoras* ſhould be ſo careful in ordering the diet, or that *Plato* ſhould ſtrictly forbid the uſe of wine? It is the opinion of the moſt judicious phyſicians that a proper regimen for the body is the firſt thing that ought to be ſettled, when we intend to form the mind, and implant the knowledge of truth and virtue, both which are nothing but empty ſound when the body is indiſpoſed and the ſenſes in a tumult! If we do not follow the healthful precepts of *Hygienus*, what will all the fine moral inſtructions of *Epictetus*, *Socrates* and *Plato* ſignify? The fineſt morality will avail nothing to one whom nature has not furniſhed with temperance, which is the ſource of all virtues, as intemperance is of all vices.

Need I ſay any more, (why indeed ſhould I go further to loſe myſelf in the hiſtory of

the paſſions, all which are comprehended in what *Hippocrates* calls ενοχμων.) Is there any further occaſion, to prove that man is but an animal, made up of a number of ſprings, which are all put in motion by each other; and yet we cannot tell to which part of the human ſtructure nature firſt ſet her hand. If theſe ſprings differ amongſt themſelves, this ariſes from their particular ſituation, from their different degrees of ſtrength, and not from their nature; conſequently the ſoul is only the firſt principle of motion, or a ſenſible material part of the brain, which we may certainly look upon as the original ſpring of the whole machine, which influences the reſt, and appears to have been firſt form'd, ſo that all the other ſprings ſeem to derive their motions from thence, as we may eaſily perceive from ſome obſervations I ſhall make and which have been made upon many different embrios.

The vibration, reſembling that of a pendulum, which is natural, which is proper to our machine, and with which every fibre, or fibrous element is endowed, cannot always exerciſe itſelf. It muſt be renewed in proportion as it ſpends itſelf; when languiſhing it muſt have a freſh ſupply of ſtrength, and the celerity of its motion muſt be likewiſe check'd when hurry'd on by an exceſs of force and vigour. In this alone conſiſts the art of true phyſic.

The body may be conſider'd as a clock, and the freſh chyle we may look upon as the former of that clock. The firſt buſineſs of nature

nature upon the entrance of the chyle into the blood, is to raiſe a ſort of fever, which the chemiſts (who dream of nothing but furnaces) take to be a fermentation. This fever cauſes a greater filtration of the ſpirits, which are about to animate the muſcles and the heart, as if they had been ſent out on purpoſe by the order of the will.

Theſe are the cauſes and principles of life, which ſometimes for the ſpace of a hundred years keep up a continual motion equally neceſſary to the ſolids as well as fluids of the body. But who can pretend to affirm whether the ſolids or fluids contribute moſt to this animal mechaniſm. All we know is, that the action of the former, if unaſſiſted by the latter, would immediately be utterly extinguiſhed. The fluids, by the rapidity of their motion rouze and preſerve the elaſticity of the veſſels, upon which their circulation depends. Hence it happens, that after inſtantaneous death, the natural ſpring of every ſubſtance is more or leſs ſtrong in proportion to the remains of life. So true it is, that this active force of the animal parts may be preſerv'd and encreas'd by the circulation, but does not depend upon it, ſince it often leaves the member or organ when entire, as we may often ſee.

I am not ignorant that this opinion has not been reliſh'd by all the learned, and that *Staahl* in particular has very much contemn'd it. This great chemiſt would perſuade us that the ſoul alone is the cauſe of all our mo-

tions. But this is rather to ſpeak after the manner of an enthuſiaſt, than a philoſopher.

In order to overthrow this hypotheſis, I ſhall not have recourſe to ſo many arguments as others before me have done. We need only caſt our eyes upon one who plays on the violin. What pliantneſs, what agility in his fingers! the motion is ſo quick, that there hardly appears to be any ſucceſſion! Now I entreat the adherents of *Staahl*, who pretend ſo thoroughly to underſtand the powers and faculties of the human ſoul, or rather I defy them to ſhew me how it is poſſible that the ſoul can ſo quickly bring about ſuch a variety of motions, which are perform'd at ſuch a diſtance from it, and in ſo many different places. This would be ſuppoſing one who plays on the flute to be able to ſound harmonious notes thro' holes, with which he is unacquainted, and is uncapable to apply his fingers properly to.

But with the Poet, we may ſay, that every body has not the advantage of going to *Corinth*. And why might not *Staahl* be more favour'd by nature in the quality of a man, than in that of a chymiſt or practitioner? This happy mortal muſt have received a ſoul different from that of the reſt of mankind; an abſolute ſoul, which is not content with ſome ſhare of empire over the muſcles ſubſervient to voluntary motion, but holds with eaſe the reins of all thoſe of the body, and is able to ſtop, check, or ſlacken them at pleaſure. With a miſtreſs ſo deſpotic,

tic, who guides the pulſation of the heart, and has the laws of circulation in her hands, there could be no fever ſurely, no pain, no weakneſs, no ſhameful impotence, nor tormenting priapiſm. Let the ſoul give the word of command, then immediately the ſprings will be put in action, and be bent or ſlacken'd accordingly. But how come thoſe in the machine of *Staahl* to be ſo ſoon out of order? He who has within him ſo great a phyſician, ought ſurely to be immortal.

But *Staahl* is not the only perſon who has rejected this vibrating principle in organized bodies. Men of greater genius have not made uſe of it in accounting for the action of the heart, the erection of the *Penis*, &c. We need only read *Boerhaave*'s phyſical inſtitutions to ſee what miſtaken, laborious ſyſtems, this great man has been oblig'd to form, by the dint of his powerful genius, and all this becauſe he would not admit that principle which ſtrikes ſo forcibly upon all bodies.

Willis and *Perrault*, geniuſes of a lower claſs, but indefatigable obſervers of nature, which the famous profeſſor of *Leyden* has known only, as it were by ſecond hand; ſeem rather to ſuppoſe the ſoul diffus'd thro' the whole body, than admit according to the principle which we maintain. But this hypotheſis, which *Virgil* and all the Epicureans embraced, and which the ſtory of the *Polypus* at firſt ſight, ſeems to confirm the motions that out-live the ſubject to which they belong, come

come from ſome remainder of the ſoul which preſerves the contracted parts, tho' they are no more acted upon by the blood and ſpirits. Whence we may perceive, that theſe authors, whoſe valuable works eclipſe all the empty fables of philoſophers, err after the ſame manner as thoſe who give to matter the power of thinking; I mean, they expreſs themſelves in terms which are either ambiguous, or have no meaning at all. In reality, what means this remainder of the ſoul, if it is not that moving principle maintain'd by the followers of *Leibnitz*, the idea of which is badly convey'd by this expreſſion; tho' *Perrault* has truly ſeen thro' it: ſee his book entitled, *a treatiſe on the mechaniſm of animals.*

It is now, I think, clearly demonſtrated, in oppoſition to the *Carteſians*, the *Staahlians*, the followers of *Mallebranche*, and the divines who are hardly worthy of a place here, that matter is put into motion by itſelf, not only when it is organiz'd, as for example in an entire heart, but likewiſe when this organization is deſtroy'd. Man, prompted by natural curioſity, is anxious to know how a body, after having receiv'd the breath of life, is endow'd with the ſenſe of feeling and becomes capable of thinking. In order to account for this myſtery, what efforts have not philoſophers made? and what ridiculous ſtuff have I had the patience to read on this ſubject.

All that we learn from experience informs us, that as long as the motion ſubſiſts, how little

little ſoever, either in one or more fibres, we need only to prick them, in order to rouze and revive it, when almoſt deſtroy'd, as we may obſerve in a number of experiments which I think are moſt proper to illuſtrate ſyſtems. It is certain, then, that motion and feeling mutually excite each other in whole bodies, as well as thoſe which are cut into different parts; I forbear mentioning certain plants which ſeem to diſcover to us the ſame wonderful appearance of the re-union of feeling and motion

Beſides, how many excellent Philoſophers have demonſtrated thought to be nothing but a power of feeling; and the rational ſoul, to be a ſenſitive ſoul employ'd in the contemplation of ideas and reaſoning about them; which may be proved from this one circumſtance, that when feeling is extinguiſh'd, ſo is thought likewiſe, as we may perceive in apoplexies, lethargies, catalepſies, and ſuch like diſtempers. There are ſome, indeed, who have maintain'd, that tho' the ſoul does not retain the remembrance of the ideas, yet ſhe thinks during theſe lethargic diſorders; but this appears to be quite ridiculous.

It would be the height of folly to loſe our time in prying into this hidden curious mechaniſm. The nature of that motion is unknown to us, as much as that of matter. How can we diſcover the manner of its production, unleſs indeed we follow the example of the author of the hiſtory of the ſoul; and, as he has done, endeavour to revive the ancient and unin-

unintelligible doctrine of ſubſtantial forms. I am as well pleas'd, when ignorant how ſimple and unactive matter becomes active and organiz'd, as I am when I find myſelf uncapable of looking at the ſun, unleſs it is thro' a red glaſs: nor am I in the leaſt diſſatisfy'd tho' unacquainted with the incomprehenſible wonders of nature, and the production of thought and feeling, in a being that but a little before ſeem'd to be but a quantity of clay.

Only let this be granted to me, that organized matter is endowed with a moving principle, and in this alone conſiſts its difference from all other matters; (can this be deny'd when confirm'd by ſo many repeated obſervations?) and all the different ſpecies of animals proceeds from various degrees of this organization, as has been already proved. This conſideration may lead us to form ſome conjectures about the perplexing obſcurity of ſubſtances in general, as well as that of man. Wherever we turn our eyes in the whole univerſe, we can ſee nothing but one continued wonder and amazing work, of which man is the moſt perfect. When compared with the monkey, or other animals, which ſeem to make the neareſt approaches to what we call reaſon, he ſurpaſſes all of them as much as the clock which *Huygenius* made to ſhew the revolution of the planets, exceeds one of *Julien le Roy*'s common watches. Since there muſt be more inſtruments, more wheels, and more ſprings in order to mark the planetary motions, than there is occaſion for to mark or repeat the hours; ſince it

required

quired more art in *Vaucanſon* to frame his mechanical muſician, than in making his duck, ſure then it muſt require ſtill a greater degree of ſkill to form a ſpeaking machine, which, perhaps, may not be altogether impoſſible, if we ſuppoſe a new *Prometheus* to ſtart up, and put his hands to the work. In the ſame manner we muſt ſuppoſe it neceſſary, that nature ſhould make uſe of more art and preparation in the formation of a machine, which for a whole age is able to mark the throbbings of the heart: for tho' the human pulſe is not an index of the hours, yet at leaſt we may look upon it as the barometer of heat and life, by which we may form a judgment of the ſtate of the ſoul. It can be no miſtake if I ſuppoſe the body of a man to be a clock, tho' a ſtupendous one, and the ſtructure of it fram'd with ſuch exquiſite workmanſhip and dexterity, that if the wheel which ſerves to mark the ſeconds ſhould ſtop ſhort, yet this would not obſtruct that which diſcovers the minutes; and the wheel too which is neceſſary to diſtinguiſh the quarters, would ſtill continue to move on in its natural courſe; and it is in the ſame manner with all the reſt, when the firſt being ruſty or out of order, have ſtopp'd their courſe. Thus when there happens to be any obſtruction in the veſſels, this does not deſtroy or retard the motions of the heart, which is the chief Inſtrument in the machine. On the other hand, the fluids, their quantity being leſſened, and having a leſs ſpace to travel thro', move with greater velocity, being hurried on

as it were by a new current, and precipitated by the force of the heart, upon account of the reſiſtance which it finds from the extremities of the veſſels. Is it not thus too; that when the optic nerve is unfit for uſe, and hinders the images of objects from being conveyed, yet ſtill this privation of ſight does not likewiſe hinder us from hearing; in like manner when deprived of the ſenſe of hearing, it does not follow that we ſhould be alſo deſtitute of that of ſeeing. Is it not thus too, that one man has the power of hearing, without the faculty of expreſſing what he hears, (unleſs it is in the caſe of an illneſs) whilſt another can hear nothing, and yet has all the nerves of his tongue in a free and proper condition, and is capable to expreſs, mechanically, all the fleeting dreams of his brain? Theſe phænomena are wonderful and ſurprizing, yet they are ſuch as ſkilful phyſicians are perfectly acquainted with. They know the natural ſtructure of man: and here, by the by, I may take notice, that in my opinion he is the beſt phyſician, and moſt worthy our confidence, who has the greateſt knowledge in the phyſical or mechanical conſtitution of the human body; who does not trouble himſelf about the ſoul, nor all that train of perplexities which this chimera is apt to raiſe in fooliſh ignorant brains, but is ſeriouſly buſied with pure nature.

Let the pretended Mr. *Charp* go on and laugh at thoſe who look upon animals to be nothing but machines; ſtill I remain unſhaken in my opinion. I believe that

Deſcartes,

Deſcartes, had he been born in a more enlighten'd age, would have met with univerſal eſteem, and reap'd the juſt reward of his experience and obſervations. It is but juſt and reaſonable that I ſhould ſay ſomewhat in praiſe of this great man, in oppoſition to a number of groveling philoſophers, bad humouriſts, and moſt wretched imitators of *Locke*, who inſtead of rallying *Deſcartes* in the moſt abuſive manner, ought to acknowledge, that as we are indebted to Sir *Iſaac Newton* for rectifying our knowledge in many particulars, ſo likewiſe, that philoſophy in general would have remained uncultivated, had it not been for the aſſiſtance of Mr. *Deſcartes*.

It is true, indeed, this great philoſopher is miſtaken in many particulars, this we freely allow: but it muſt be own'd that he had a great knowledge in the animal nature; he was the firſt who perfectly demonſtrated animals to be meer machines. Now after ſo important a diſcovery, a diſcovery which ſhews ſo much penetration in the diſcoverer, after this, I ſay how can we avoid ſhewing an indulgent and forgiving temper to all his errors?

All of them, in my opinion, are fully aton'd for by his declaration of this one truth. For in ſhort, tho' he deſcants upon the two different ſubſtances; yet it appears very plain, that this is only a ſtroke of policy, a piece of fineſſe, to make the Divines ſwallow the poiſon which was conceal'd in that analogy, of which they alone were ignorant, whilſt every

every body elſe could not help being ſtruck with it. 'Tis this ſtrong analogy alone, which obliges all men of knowledge and true judgment, to acknowledge theſe vain, haughty mortals, more diſtinguiſh'd by their pride, than the name of men, how great ſoever their deſire may be to raiſe themſelves, to be in reality, only animals, or machines. They have all that marvellous inſtinct, which by education, is formed into underſtanding, and has always its ſeat in the brain, and in default thereof, as when there is none, or it happens to be oſſified, in the *medulla oblongata*, and never in the *cerebellum*; for I have ſeen it conſiderably damaged, and others * have found it skirrous, tho' the ſoul continued to exerciſe its functions.

To be a machine, to feel, to think, to be able to diſtinguiſh good and evil, as well as the eyes can different colours, in a word, to be born with an underſtanding and moral ſenſe, yet at the ſame time, to be but an animal, or machine, in all this there is no more abſurdity than in aſſerting that there is a Monkey, or Parrot, both which are capable of giving and receiving pleaſure. Here I may take the opportunity to aſk, who at firſt could have imagined, that one drop of the ſeminal liquor which is diſcharg'd in copulation, ſhould be the occaſion of ſuch extatic pleaſure, and afterwards ſpring up into a little creature, which in time, certain conditions being

* Haller in the philoſophical tranſactions.

ſuppos'd,

ſuppos'd, ſhould itſelf feel the ſame tranſports? So far then am I from thinking that thought is inconſiſtent with organized matter, that I look upon it to be a property as much belonging thereto, as electricity, impenetrability, extension, &c.

Is there occaſion for more obſervations? If there is, there are many remaining that are undiſputable, all tending to prove that the origin of man perfectly reſembles that of other animals, as has been proved from what we have already produced as neceſſary to that purpoſe.

I call upon the moſt curious obſervers, to give their evidence to determine this point. Let them ſay if it is not fact, that man at firſt is but as a mite, from which he ſprings as the butterfly does from a caterpillar. The moſt important writers * have inform'd us of a method whereby we may ſee the animalcul. All the curious, *Hartſoeker* in particular, have ſeen this in the ſeed of the man, tho' not in that of the woman; this is a truth, of which none, but the moſt fooliſh, make any doubt. Every drop of the ſeed contains an infinite number of theſe animalcula, and when theſe are diſcharg'd into the ovarium, only the moſt active or vigorous of them are able to force their way, and to implant themſelves in the egg which is furniſh'd by the woman, and gives the firſt nouriſhment. This egg being for ſome time lodg'd in the fallopian tubes, is thence con-

* Boerhaave Inſtitut. Med. and a great many others.

vey'd

vey'd into the womb, where it takes root in the ſame manner as a grain of corn does in the ground. And tho' in the ſpace of nine months, it grows to a monſtrous ſize, yet it differs in nothing from the eggs of other females, only that its coat (*Amnios*) never hardens, but dilates itſelf prodigiouſly, the truth of which we may judge by obſerving the ſituation of the Fœtus when ready to be brought forth into light, and I myſelf have had the ſatisfaction of ſeeing it in a woman who died when the time of her delivery was juſt at hand. Let this be compar'd with other leſs embryos, and nearer their firſt beginning, then 'tis the egg always within its ſhell, and the animal within the egg, which being uneaſy in its confinement, by a ſort of mechaniſm ſtrives to ſee the light, and in order to ſucceed, the animal with its head breaks thro' this membrane, whence at laſt it forces its way, as a chicken, or any other bird. I will add here a remark, which I belive has not been made elſewhere; which is, that the Amnios does not become thinner, notwithſtanding its being ſtretch'd out to ſuch a degree; in this, reſembling the womb, which is diſtended by the infeltrated juices.

Let us view man when within the ſhell, and when out of it; let us take a microſcope and examine the youngeſt embryos, thoſe of the growth of four, ſix, eight, or fifteen days; after this age we may diſcover them with our naked eyes. Then we can perceive the head only, a round egg with two blackiſh ſpecks,

ſpecks, which repreſent the eyes. Before this time, all being unform'd, we can ſee nothing but a pulp of marrow; which is the brain where the original of the nerves is firſt form'd, where the principle of feeling is firſt ſeated, and the heart which begins already to beat in this ſoft pulp! This is the *Punctum ſaliens* of *Malpighi*, part of the livelineſs of which does perhaps already proceed from the influence of the nerves. Then we ſee the head by degrees ſtretch forth the neck, which being widen'd, firſt forms the thorax, where the heart immediately deſcends, and takes up its ſituation. The belly is framed next, which is divided into two parts by a partition, call'd by anatomiſts, the Diaphragm. Theſe parts being expanded, furniſh the arms, the hands, the fingers, the nails, and the hair; the other gives the thighs, the legs, the feet, *&c.* with the known difference only of ſituation, which forms the ſupport and ballance of the body. 'Tis a ſurpriſing vegetation. Here you ſee the hairs that cover the tops of our heads; and there you behold the leaves and flowers; the ſame luxury of nature ſhines throughout; and at length the directing ſpirit of plants is placed, where our ſoul is, that other quinteſſence of man.

Such is the ſenſible uniformity of nature, and the analogy between the animal and vegetable oeconomy, man and plants. Nay, very likely there are animal plants, that is, plants which in their vegetation, either fight with one another

ther like polypus's, or perform other animal functions.

This then is almoſt all we know of generation. That the parts which attract each other, which are made to be joined together, and to take up their particular places of ſituation, all unite themſelves according to the laws of nature, that after this manner comes the formation of the eyes, the heart, the ſtomach, and in ſhort, the whole body as has been obſerved by very great men, all this is poſſible. But as experience fails us in the midſt of theſe niceties, I ſhall therefore advance nothing upon ſuppoſition, looking upon every thing which does not ſtrike my ſenſes, to be a myſtery that cannot be fathom'd. It is ſo ſeldom, that both ſeeds meet in coition, that I am ſtrongly inclined to believe that the ſeed of the woman is not neceſſary in generation.

But here ſome will object, and ſay, that we muſt ſuppoſe both ſexes to have an equal ſhare in generation, otherways, ſay they, how could we account for that ſurprizing likeneſs there is in children, ſometimes to the father, and at other times to the mother? On the other hand, tho' I own, that there will be a good deal of perplexity in attempting to explain this phænomenon, yet I think, that a difficulty of this nature ought never to counterballance a real fact. It appears to me that the man does all, whilſt the woman as it were enjoys a profound ſleep, and is loſt in

a ſort

a ſort of extaſy. It ſeems then, that the parts muſt have been properly ranged from all eternity in the ſeed, or perhaps in the animalcule of the man. Yet this infinitely ſurpaſſes the comprehenſion of our moſt ingenious obſervers. As they cannot ſee, or diſtinguiſh the particular parts, ſo they are not capable to judge of the ſtructure, formation, and hidden mechaniſm of the body, no more than a mole is to form an idea of the ſpace of ground which a ſtag is able to run over.

In reality, we ourſelves are but as moles in the field of nature, and we make the ſame progreſſion which that animal does; and 'tis our pride which pretends to ſet bounds to what is boundleſs. We are like a watch which ſhould ſpeak in this manner, (a writer of fables would make it a character of conſequence in one of his performances.) "What is he but a blockhead, who takes "upon himſelf to be my maker? am "I to be call'd the creature of this ſilly "mortal! I who divide the time! I who "mark the courſe of the ſun ſo exactly! "I who repeat aloud the hours which I "diſcover! No, no, this cannot be." In the ſame manner, we mortals, ungrateful wretches! look down with an air of contempt on the common parent of all kingdoms, as the chymiſts expreſs it. We conceive, or rather we ſuppoſe, a cauſe ſuperiour to that which we are all indebted to, and which has certainly made every thing in a manner that's wonder-

ful and unconceivable. Matter has nothing contemptible in it, tho' it may appear ſo to coarſe eyes, who deſpiſe it in the moſt ſhining works; and nature is free and unbounded in all her performances. She produces millions of men with more facility and pleaſure, than a watch-maker frames a piece of clock-work. Her power is equally diſplay'd in the production of the loweſt inſect, as it is in that of the more lofty creature, man. The animal kingdom coſts her no more labour than the vegetable, and ſhe can form the greateſt genius with the ſame degree of eaſe, as ſhe does an ear of corn. Let us not then be carried away by the ſtrength of fancy alone, but let us examine thoſe things which are preſented to our eyes, and by this we may form a judgment of others which are beyond our ſight, and hidden from our prying curioſity. Let us conſider the Monkey, the Beaver, the Elephant, *&c.* in their actions and behaviour. Since it is evident, that they cannot act in the manner they do, without underſtanding, why ſhould we refuſe it to theſe animals? And if you grant them a ſoul, enthuſiaſts, then you are quite overthrown. You ſay, that you do not pretend to judge of the nature of this ſoul, whilſt at the ſame time (O ſtrange contradiction!) you openly affirm it to be deprived of immortality. Who does not at once perceive that it muſt be mortal, or immortal, according as ours is, and muſt undergo the ſame fate whatever it may be? 'Tis in this

this manner they run upon Scilla, whilſt they are endeavouring to ſhun Charibdis with the utmoſt precaution.

Dare to throw off thoſe prejudices in which you are fetter'd: aſſert your liberty, and arm yourſelves with the light of experience; then inſtead of being blinded by ignorance, and drawing inferences derogatory to the honour of nature, you will give her the praiſe and eſteem ſhe really deſerves. Open your eyes only, and meddle not with what you are unable to comprehend. You will ſee that the huſbandman whoſe light and underſtanding does not go beyond the furrow which he plows, does not eſſentially differ from the greateſt genius, as has been prov'd by diſſecting the heads of Deſcartes and Newton. Upon enquiry you'll be convinc'd that the fool and the idiot are only beaſts in a human form, as a ſenſible monkey is a little man in a different ſhape; and in ſhort, that all depends upon the different organization. An animal that's properly conſtructed, and has been taught aſtronomy, will be able to foretel an eclipſe, as one which has been bred up in the ſchool of Hippocrates, and ſpent ſome time in viſiting the ſick, will be able to preſcribe a cure, or foretel when the diſtemper is incurable. 'Tis by this thread of truths and obſervations that we trace out matter, and affix to it that admirable property of thinking, tho' we cannot indeed, with our eyes, ſee this connexion, becauſe the eſſential nature of this attribute is unknown to us.

Let us not pretend to ſay, that every machine, or animal, is entirely annihilated after death, nor that they put on another form, ſince we are quite in the dark as to this point. To affirm an immortal machine to be a chimera, or fiction of our brain appears to be as abſurd as it would ſeem in Caterpillars, when they ſee the dead bodies of their kind, bitterly to lament the fate of their ſpecies, which would ſeem to them to be utterly deſtroy'd. The ſoul of theſe inſects (for every animal has one peculiar to it) is too narrow, and confin'd to be able to comprehend the transformation of their Nature. Never did any one of the acuteſt amongſt them, entertain the leaſt notion that he would become a Butterfly. It is the very ſame caſe with us. What do we know of our future deſtiny, more than we do of our original? Let us then confeſs our total ignorance, ſince upon this our happineſs is placed.

He who will think thus, ſhall be wiſe, juſt, pleaſed with his condition, and conſequently happy; he will patiently expect death, without fearing, or deſiring it; he will cheriſh life, thinking it unaccountable how diſguſt ſhould corrupt the heart in a world abounding with ſo much joy; full of reſpect for nature; overflowing with gratitude, affection, and love; all which riſe in proportion to the bounty which he has received. Happy in ſhort in the enjoyment of life, and pleas'd with being admitted a ſpectator of the univerſe, he will never think of attempt-

attempting to deſtroy his own being, nor that of others; nay, ſo far from this, that he will have an univerſal benevolence to all mankind, and will be in love with this principle of humanity, even tho' in his enemies. He will not hate, but will be ſorry for the vicious, they will appear to him as deform'd men. But in good nature, bearing with the infirmities of the mind and body, he will at the ſame time admire their beauty and vertue. Thoſe who have been favoured by nature, will appear to him more worthy of eſteem than others whom ſhe has treated with the harſhneſs of a ſtep-mother. 'Tis thus, that the advocate for matter ſo often thinks and talks, and pays that reſpect, refus'd by others, to natural abilities, which are certainly the ſource of all acquired qualifications. In ſhort the materialiſt, tho' his vanity may murmur againſt it, in reality is convinced, that he is only a machine, or animal, and he will not abuſe any of his fellow creatures. Being inſtructed by nature how to regulate his actions, which are proportioned to that degree of analogy before-mentioned: In a word, following the law of nature given to all animals, he will not do to another, what he would not chooſe to be done to himſelf.

Let us conclude boldly then, that man is a machine; and that there is only one ſubſtance, differently modified in the whole univerſe. This is not an hypotheſis raiſed upon the ſtrength of things required, or ſuppos'd to

be

be true; this is not the work of a man of prejudice, nor of my reaſon alone; I ſhould have deſpiſed any other guide as unſure, had not my ſenſes ſtepped forth, and if I may ſo ſay, holding up a lighted torch, induc'd me to purſue the road which ſhin'd with light. Experience has ſpoke to me in behalf of reaſon, and thus it is, that I have joyn'd them both together.

But it may be obſerved, that I have not made uſe of theſe proofs, or ſtrong inferences, but as deductions immediately drawn from a number of phyſical obſervations, the truth of which no men of learning can diſpute; and indeed it is them alone whom I acknowledge to be proper judges of the conſequences which I have drawn, abſolutely refuſing to ſubmit to the judgment of any prejudiced perſon, or of him who is unacquainted with anatomy; becauſe in effect, he is ignorant of that philoſophy which alone we make uſe of, that is, a knowledge in the ſtructure of the human body. What will all the weak reeds of divinity, metaphyſics and nonſenſe of the ſchools, avail againſt the firm and ſolid oak? Childiſh arms like to the foils made uſe of in fencing ſchools, which may give the pleaſure of fencing, but will never enter the body of our antagoniſt. Need I here mention that I mean thoſe fantaſtical, impertinent notions, thoſe thread-bare pitiful reaſonings, which as long as there is the leaſt ſhadow of prejudice, or ſuperſtition upon earth, will be made upon the

the pretended incompatibility of two ſubſtances touching and moving each other without intermiſſion? This is my ſyſtem, or rather, this is the truth, if I am not much miſtaken. It is ſhort and plain: Let who will diſpute it.

FINIS.